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Theoretical analysis of a difficult estimative problem

THE MANY BURDENS OF DEFENSE IN THE SOVIET UNION

Rush V. Greenslade

Rubles, dollars,
Computers, collars,
Engineers, chemists,
Male or femist,
Capital and labor
For plough or saber,
Opportunity cost,
Steel capacity lost;
We'd choose a measure if we knew how!
Burden, burden, who's got the burden now?

Those who have followed the writings and estimates on Soviet military expenditures over the years are aware of considerable difference of opinion as to how much of a burden on the Soviet economy military programs are and as to the correct way to measure the burden. Ways of measuring burden have, indeed, proliferated in recent years. To illustrate this point, consider the following statements, all of which have been used to express the burden of defense on the Soviet economy.

a. Defense expenditures are about eight percent of GNP,[1] when both are measured in ruble prices.

b. Defense expenditures are 11 percent of GNP when measured in dollar prices.

c. The ruble cost of defense in the USSR understates the burden on the economy because defense programs use especially high quality, scarce resources which are badly needed by the economy.

d. Military R and D is about ¾ of total R & D.

e. Military procurement of machinery and equipment is about 20 percent of all final uses of machinery and equipment.

f. Finally, it is possible to calculate, but with very uncertain accuracy, that defense uses directly or indirectly nine percent of total labor, five percent of fixed capital, eight percent of total steel production, five percent of electric power, nine percent of chemicals, five percent of transportation, etc.

[1] Gross National Product.

In the United States no one is particularly reluctant to use dollar cost as the measure of the burden of defense.[2] The objection to the use of ruble cost in the case of the USSR stems in part from a widespread and well-founded suspicion of the usefulness or significance of prices in the Soviet economy. One can conclude from the haphazard incidence of shortages of industrial as well as consumers' goods in the USSR that the prices do not represent relative priorities either of consumers or of planners. The artificiality of Soviet prices is, however, only a symptom of a much more fundamental disability of that bureaucratized system. The Soviet productive system is in a state of gross and pervasive "disequilibrium," in the sense of the word as defined in conventional equilibrium theory of economics. This paper attempts to explain how this theory applies to the USSR, and why, as a consequence, the ruble measure of Soviet defense has a very uncertain meaning.

It is to be hoped that this discussion does not strike a blow for ignorance. Nevertheless, it is a plea for recognition that we are in the presence of uncertainty. The problem is a briar patch of complexity. If the reader finishes this paper with the feeling that he understands the problem clearly, he is ahead of the author. The following simplified and condensed outline of the argument may help the reader to muddle through.

i. The proper measure of the burden of defense is its *opportunity cost*, that is, the value of alternative goods and services done without in order to acquire defense.

ii. In a perfectly competitive market economy in "equilibrium," the *opportunity cost* of defense is the same as its *resource cost* or cost of production, that is, the sum of costs of all inputs used to produce the defense goods and services.

iii. The bureaucratic nature of the Soviet system, the physical allocation of resources by bureaus instead of market allocation, keeps the economy in chronic "disequilibrium."

iv. In an economy in a state of chronic "disequilibrium," *opportunity cost* has several different values, depending on which alternative goods are valued, and it is quite uncertain which of the many *opportunity costs*, if any, is measured by *resource cost*.

v. Our ruble estimate of defense expenditures in the USSR is, more or less, a *resource cost* estimate and is a very uncertain measure of burden.

vi. Any other measure, such as the dollar cost of Soviet defense, is an even worse measure of burden.

vii. Effective transfer of research and development investment resources out of defense would require some drastic administrative reform.

[2] Whenever I speak of cost as a measure of burden, I mean defense cost relative to some other aggregate such as GNP, e.g., the dollar value of defense as a percent of GNP in dollars or the ruble value of defense as a percent of the GNP in rubles.

viii. The impact of a change in defense in the USSR, like the burden of defense as a whole, should be considered to be multi-valued. The value of a shift to investment, as measured by the effect on growth, may be much less than for a shift to consumption, or at least some kinds of consumption.

The Burden of Defense in Equilibrium

The burden of defense or any other portion of final demand in a market economy is, according to conventional economic theory, measured by the market value of the goods and services purchased (as a share of GNP), provided we assume the economy is in equilibrium. Equilibrium is defined precisely in general equilibrium theory. It states that a dollar's worth of defense (or any end use) foregone would release resources that could be transferred to produce a dollar's worth of any other good or service. The necessary condition for this is that the value of the product of any resource at the margin is the same in all possible industries. Thus, if a given kind of labor is used in both the blue jean industry and the integrated circuit industry, the value of the product of one man-month of that labor will be the same in each industry.[3] These statements are the basis for the definition of opportunity cost. The opportunity cost of one good is the value of other goods foregone. Hence the burden of defense is its opportunity cost—not its cost of production but the value of the other goods that could have been produced alternatively. In equilibrium, these two, the cost of production and the value of goods that could have been produced, are the same.

The key aspect of equilibrium is that opportunity cost, or value foregone, is single and unique; no matter what goods are thought to be given up, their exchange value is the same. A gun that costs $10 would be produced by resources that could produce various other goods. Suppose those resources could have produced 11 lbs. of butter, or 4 pipe wrenches. In equilibrium, 11 lbs. of butter and 4 pipe wrenches would both have a market value of $10. In the absence of equilibrium, opportunity cost (or burden) is ambiguous. The 4 wrenches might be worth $8 and the 11 lbs. of butter $6, or $12. In that case there are two possible measures of opportunity cost, or as many measures as there are possible alternative goods.

Perfect equilibrium in a market economy requires perfect competition! This happy condition does not exist in practice—certainly not in the US. However, the usefulness of the concept, in spite of the

[3] The product of labor referred to here is its net product (or marginal product), product net of the costs of capital, materials and other resources used in production.

stringency of the assumption, can be clarified by some examples. In the US, engineers must be hired in the market, and Revlon Corporation can, by paying a similar price, acquire just as good a chemist as Dow Chemical Corporation. Or a small computer service can hire just as good a programmer as IBM uses on its fattest defense projects. Auto producers can buy stainless or high strength steel alloys at no price premium and as easily as military aircraft producers. Finally, government, businesses, and individuals pay the same prices for the same products by and large (allowing for such things as volume discounts). On the other hand, equilibrium is far from universal. Uranium is pre-emptively controlled by the government. Excise taxes, price supports, tariffs, and monopolies exert their influence. Nevertheless, in the United States, as in most market economies, there are strong private incentives for moving resources in the direction of equilibrium. The characteristic of equilibrium or a reasonable approach to it which is crucial both for the health of an economy and for measuring values in it is that resources can and do, given some time, transfer at small cost from one use to almost any other. This does not necessarily occur by direct transfer but by multiple, successive, and indirect shifts.[4]

The Burden in Disequilibrium

In an economy in disequilibrium the opportunity cost of a program may have many possible values or it may not even be measurable. For example, consider one part of the US economy, which is surely not in equilibrium—social services for the poor. Would $5 billion taken from defense expenditures produce the same value of production in health services via some national health insurance, or would a large part of the funds be dissipated in higher incomes for doctors, hospitals and associated enterprises? Or would $5 billion transferred into an anti-poverty program produce an equivalent value of output? In the latter case, there is no known way of measuring output.

[4] The easiest way of transferring resources to new or different uses is by preferential direction of new investment and new workers to the new uses, combined with depreciation and attrition of resources in the old uses. Most transfers of resources probably take place at this evolutionary rate. Frequently, however, changes in demand require a much more rapid and radical change. Then existing resources as well as new resources must be redirected. It should be noted that most physical assets cannot be easily moved to different locations. Transfer in that case means using the assets to produce a different product. The argument of this section and the succeeding one implies that for any degree or rate of reallocation of resources, including even full mobilization for war, the response of a market economy is likely to be more efficient than that of a centrally directed socialist economy.

The Soviet economy is in a state of pervasive disequilibrium. Resources in some activities are used very much more efficiently than in others. A few conspicuous examples are: the wide disparity in efficiency (output per worker) between agriculture and manufacturing; the great disparity in profits (negative and positive) between firms; the widespread production of tools and spare parts by enterprise for their own use at high cost compared to the cost of producing them in specialized tool and spare part enterprises; the surplus of some consumers' goods coincidental with the chronic shortages of many other kinds; the enormous resources tied up in unfinished construction and uninstalled equipment. Not by the greatest reach of abstraction can one assume that resources are used in all industries at about the same level of productivity.

In the centrally planned and administered economy of the USSR, resources do not transfer easily from *low* value uses to *high* value uses. They do not transfer at all except by official plan or bureaucratic needs. Even under officially planned fiat, the shift of resources from their accustomed uses to new ones is often painful. Witness Khrushchev's difficulty in accelerating the chemical industry at the expense of steel. When anyone below the top political leader seeks to change things, the results are likely to be nil. Gosplan and various ministers have been inveighing for decades against low product quality, excessive construction time, and inefficient small-scale production of spare parts and castings, and in favor of specialization of production and the introduction of new and improved designs. Yet none of these deficiencies have been noticeably remedied.

The burden of defense or of its major parts varies according to what use one assumes the resources might otherwise be put. When in 1955 Khrushchev reduced the number of personnel in the armed forces and sent their equivalent to the Virgin Lands, he achieved a gain in output very much larger than the reduction in defense cost. That opportunity was, however, unique. Other allocations of the resources released would have come out differing from the Virgin Lands result and differing from each other.

Any economy is in disequilibrium to one degree or another in the sense that transitional adjustments are always in progress and new developments are continually initiating additional adjustments. So long as resources can move in response to economic demands, the assumption of equilibrium can be usefully made. In such cases, monetary values are a reasonable measure of opportunity cost. But the Soviet economy does not respond like a market economy and ruble costs are an uncertain measure of the burden of defense.

At this point it should be emphasized that the CIA estimate of defense cost is not based on direct information about the prices the Soviet armed forces actually pay, except in the case of the pay of personnel. There is conflicting evidence on whether the armed forces procure material and equipment at low, subsidized prices or whether the prices cover cost of production, as defined by Soviet accounting. The defense line in the published National Budget is not detailed or defined enough to resolve the issue, but when adjusted for its probable coverage it does not contradict the hypothesis that for the most part the prices paid by the armed forces cover cost of production. The estimated ruble costs are based mainly on civilian costs of identical or similar materials, or dollar costs converted to rubles by ruble-dollar ratios that were derived from similar civilian equipment. For comparison with GNP, and as a measure of burden, the costs are adjusted to a factor cost basis by removal of excise taxes, and addition of subsidies, interest, and other missing capital charges.

Thus the uncertainties in the CIA estimates are not on account of possible subsidies, direct or indirect, in the transfer prices paid by the armed forces.[5] There are data problems enough in estimating quantities and specifications of Soviet military procurement, its dollar cost and thence its ruble resource cost. This paper calls attention to the additional uncertainty that arises because resource cost in the USSR, even if correctly estimated, does not necessarily equal opportunity cost.

I shall argue that the Soviet economic system should be analyzed like an administrative bureaucracy. In such a system the value of an alternative use of resources depends on what that use is, and furthermore, on what resources are to be transferred. A single ruble total for defense cannot convey these multiple values. However, none of the alternative measures are better, and indeed, are perhaps worse.

Alternative Measures of Burden

Let us consider first the significance of the dollar value of Soviet defense as a share of GNP, measured in dollars. If rubles are not to be trusted, then dollar valuation has an *a priori* attractiveness. The estimated dollar cost of Soviet defense programs serves the legitimate function of facilitating a comparison of the aggregative size of Soviet

[5] The prices actually paid by the armed forces for various types of procurement would, of course, have a bearing on the allocation decisions of Soviet leadership; but how much, is uncertain. The leaders have been long accustomed to think in terms of the physical allocation of manpower, steel, fuels, trucks, etc.

and US expenditures or components thereof. It does not, however, reflect the resource cost, much less the opportunity cost within the USSR.

In a recent newspaper column by Marquis Childs,[6] an anonymous Pentagon source was quoted to the effect that Soviet defense measured in dollars was nearly 20 percent of GNP[7] and that percent is a better measure of burden on the Soviet economy than the percent in rubles, less than 10 percent. But, to repeat, the dollar percent is a wrong indicator of burden. It is wrong because it implies that resources transferred out of defense would produce a cornucopia of civilian goods. For example, half of Soviet defense expenditure in dollars might be approximately $30 billion—more than 11 percent of consumption. If the transfer of resources from defense to consumption took place at American relative prices and efficiencies, consumption would increase that much. However, at ruble prices, which more nearly measure the relative efficiencies of Soviet industries, half of defense would add less than 6 percent to consumption. Even the 6 percent figure may be too high, as I argue below.

The difficulty with applying US prices to the USSR is illustrated by the case of military personnel costs, including subsistence and quarters, and other outlays. In this case, the ruble cost is reasonably well-known or easily estimated. That is not to say that the Soviet armed forces necessarily pay full resource cost on everything they purchase, but these full costs (e.g., of food and uniforms) can be approximately estimated. The pay and subsistence of Soviet enlisted men is very much lower than that of American enlisted men. While not conceding that the pay and subsistence of military manpower reflects its opportunity cost within the USSR, one can conclude that there is no justification for using the very high US pay and subsistence rates as a measure of the burden on Soviet economy.

The rationale for using dollar prices applies, if at all, to the valuation of Soviet military equipment. The CIA has explained that the low ruble price of military equipment relative to its dollar price is mainly a reflection of the high cost of food and textiles in the USSR rather than of the efficiency of the Soviet arms industries. However, the feeling persists that the burden on the Soviet economy of producing such a substantial quantity of sophisticated equipment must be more than the estimated ruble costs imply. The dollar costs are surely not the right measure, but the Agency has implicitly concurred

[6] *The Washington Post*, 9 February 1970.

[7] The basis of the dollar percent quoted is unknown. It is a great deal higher than CIA's estimate of Soviet defense in dollars—about 11 percent of GNP in dollars.

in the criticism of ruble prices by advancing a hypothesis about scarce, high quality resources. Thus, we have said the military establishment pre-empts especially high quality resources, both men and materials, which are badly needed for the modernization of Soviet industry, and that on this account the ruble costs of defense understate its effect on the rest of the economy. The discussion which follows suggests that this hypothesis may be misleading and should be re-examined in the light of the opportunity costs of these scarce resources.

In the first instance the high quality resource hypothesis implies that our estimates of cost per unit of weapons including research and development costs are too low. That may be true, but even if full resource costs were correctly estimated, there still might be a kind of understatement which would be significant. If the resources are badly needed in the civilian economy, then their productivity in civilian uses would be higher than resource cost. In this sense, the opportunity cost would be greater than the estimated ruble cost. If the Soviet economy is in disequilibrium, as argued above, this might be true. However, is it true in fact? For this question, the nature of the disequilibrium is crucial.

It is plausible to suggest that the rapid expansion of expenditures on advanced weapons in the early 1960's disrupted civilian programs of investment and research and development, and that it created shortages and bottlenecks of specialized types of materials and equipment. This argument is at least consistent with the very abrupt reduction in the rate of economic growth after 1960. But has this remained the case in recent years? The passage of time has made this bottleneck explanation less credible. Given time, specific bottlenecks can be broken simply by an adjustment of allocations within the overall civilian/military division of funds. But the continuing decline of the output-capital ratio and of the rate of growth of factor productivity despite rising civilian research and development, and strenuous administrative efforts to stimulate new technology, argue that the economic problems are probably chronic and more deep-seated, than the bottleneck hypothesis comprehends.[8]

The problems of transferring resources from military to civilian uses, from investment to research and development, from any of those to consumption or vice versa are institutional in nature. The disequilibrium in the USSR is institutional rather than allocational. By this I mean that significant improvements in the Soviet economy

[8] For a detailed analysis of diminishing returns to investment, see *Investment and Growth in the USSR*, ER IR 70-10, March 1970.

cannot be achieved simply by reallocating funds, or even by changing physical plans and allocations. The existing state of affairs is entrenched in a bureaucratic administrative structure whose rigidities are an imposing barrier to change. The widespread belief that the Soviet leadership can reallocate resources at will in large quantities in any desired direction is not borne out by experience. They can reallocate some resources in some directions. The New Lands campaign was an impressive movement of labor and agricultural equipment. However, Khrushchev's campaign to expand the chemical industry had faltering and mediocre results, and is still not swinging in spite of continued support by Brezhnev and Kosygin. Moving labor around is much easier in the USSR than redirecting the use of plant and equipment.

The relation of administrative arrangements to the burden of defense can perhaps be clarified by an extreme example from history.

The Burden of Defense in Sparta

Suppose we were to ask what was the burden of defense in ancient Sparta. The question could not be answered in economic terms. The Spartan society and government existed primarily for war. Whether peace or war prevailed at any given time, the Spartans were perpetually mobilized. Resources did not shift between defense uses and civilian uses. On the contrary, the labor was permanently divided into two classes, the Spartans who devoted themselves to a military life, making war, or training for the next war, and the Helots who were forcibly assigned to the job of supporting the Spartans and making their weapons. The Helots could not fight very well and did not want to fight anyone, except perhaps the Spartans, which they did when they thought there was a chance to rebel. The Spartans could not farm or shoe horses and certainly wouldn't want to.

The case of Sparta points up two problems in extreme form. First, it would have been very difficult to discover what share defense absorbed of Sparta's GNP, because the resources for defense, either the Spartan's activities or that part of the Helot's work devoted to supporting them, were not, in general, purchased in the market, but were pre-empted by command. (Estimating Sparta's civilian GNP would, of course, be no trick for economic intelligence officers.) The second problem is that even if the cost of production of defense in Sparta were estimable, its opportunity cost was not. An alternative use of resources and an estimate of its value could be achieved only by a radical institutional overhaul of the Spartan state and body politic, and all its tradition and ideology.

The Redirection of Bureaus

The Soviet economic administration resembles the Spartan one in interesting ways. Large parts of the military production are separated from civilian production not only by opaque security curtains, but different organizational subordination, and by different sets of rules and *modus operandi*. Under what conditions and in what condition can resources shift out of military work to civilian? Some can shift quite easily; noncommissioned soldiers can shift to civilian employment at no loss in ruble value produced. The aircraft industry can shift from military to civilian aircraft fairly efficiently as it did in 1956–1958. The same is true for those parts of the civilian equipment industries that are producing land armaments or related equipment, so long as they shift to similar types of civilian equipment. The difficulties center in the advanced weapons systems, both R & D, production and deployment.

It is evident that the Soviet military establishment has achieved a much more impressive record in fostering the development of new products, and bringing them into serial production, than has civilian industry. At least three conditions seem to favor these military activities. First, the familiar and ubiquitous supply difficulties of Soviet industry succumb much more easily to the gentle coaxing of military priority and expediting. Second, Communist party interference is at a minimum in military work. Third, and most important, military R & D and production benefit from the close, interested, and demanding supervision of the consumers of the product. This effective communication of users with producers is missing at all stages of civilian production.

The degree of difficulty of transferring the high quality performance of the military productive organizations to civilian objectives is impossible to estimate. When the US wished to launch itself into space, it set up an entirely new agency, gave it a goal, priority, slogans, and resources. Perhaps the relative failure of the Soviet space program may be in part due to the fact that it was left under the control of the armed forces for whom space was a secondary goal. Recent efforts of the Soviet government to improve civilian R & D issuing more and still more instructions as to managing, training, paying bonuses, contracting with consumers, etc., have not been and are not likely to be very useful. A major institutional overhaul as well as a reallocation of resources would be required. The mills of Gods and Bureaucracies grind exceedingly small, but only if the product stays the same. If you wish to change from grinding flour to grinding lenses, or vice versa, then you need to get a new bureau.

The Burden of Defense in the USSR

The conclusion to be drawn from the arguments above is that the burden of defense, that is, the opportunity cost of the resources used in defense, depends on which alternative uses the resources would be transferred to and which resources are to be transferred. Even with accurate data no single measure will be accurate. However, the ruble measure, allowing for a generous margin of error, is less misleading than any other single measure. Thus, the share of defense in total R & D, the defense share of machinery production, or of electronics production, while interesting in themselves do not justify conclusions about burden. Each would suggest a much heavier burden than the actual total cost of defense in rubles as a share of GNP. None of these specifics has any more implication for the burden of defense than the share of titanium used in defense. In each case, as with ruble costs, the question to be asked is whether the opportunity cost of the resources, or the value of the marginal product in alternate uses is more, equal to, or less than their cost in military use.

Because of the institutional disequilibrium of the Soviet economy, multiple and quite different answers can be expected as the opportunity cost of different kinds of resources. In research and development there is reason to believe that civilian industries could not effectively use large amounts of these resources without a substantial and unspecifiable institutional reform. Resources that could be shifted to civilian investment probably could do so at no loss in ruble value of product. However, the utility of investment depends on its rate of return, that is, its effect on growth. An accumulation of evidence indicates that the return on investment in its *present pattern and distribution* has gotten very low. This means that, barring some drastic institutional reform, a large transfer of resources from defense to investment is likely to increase the rate of economic growth by a disproportionately small percent. In both cases the suggestion is that the opportunity cost is probably less than the resource cost of the military resources.

How this might work out for various different kinds of consumers' goods, for agriculture, for housing, for consumer durables, would have to be examined case by case. One supposes that consumer durables (including automobiles) could be expanded fairly readily by resources now used in defense production, but that consumer services, highways, repair services, and agriculture might quickly run into diminishing returns.

An important application of these views, if they are correct, is to the analysis of the economic impact of a change in defense spending such as might result from an arms limitation agreement. The argu-

ment here is that there is no standard or routine calculation that will give a useful answer. Each proposed change in defense spending must be studied as a special and unique case with due regard to plans of the leadership, the alternative economic opportunities, and the possibilities for organizational change which might be in the offing. And for each change several alternative impacts could be estimated. How this research might proceed is the subject for another article.

THE LESSONS OF THE SEPTEMBER 30 AFFAIR

Richard Cabot Howland

> "Indonesia stands today with one foot in the national-democratic stage and one foot in the socialist stage . . . in order to consummate the revolution, there is only one road for the working class—*rebutkan kekuasaan politik!* Seize political power!"
>
> Bung Karno, May 1, 1965

He is dead now, but his mad rhetoric still echoes in the mind for those who were there. Speech after speech, Sukarno's cadence set the rhythm for our work and our lives in that long summer of 1965. We battened down the Embassy hatches and waited, straining to fathom his purpose and predict his next move. One after another, faster and faster, the PKI's enemies were over-run; the domino theory was being tested before our eyes. "All of history," Emerson once wrote, "stands in the long shadow of one man." So too did Indonesia by September 30 of that year . . . until the last domino refused to fall.

In retrospect, it is easy now to say that our initial interpretation of the "September 30 Movement"—the so-called PKI coup attempt of October 1, 1965—was correct. We knew from the start that it was not a coup in the classic sense. Our first reaction was that Sukarno was behind it all. We knew that he believed he stood on the stage of history, that he wanted his Indonesian revolution to become "the greatest of all revolutions, even a summing-up of all revolutions," as he put it. For months he had tried to raise the curtain on the next act of his scenario for this "greatest of all revolutions," an act which he called "entry into the Socialist stage"—the juncture at which collaboration with the bourgeois nationalists is abruptly terminated, the latter are removed from the stage in disgrace, and the drama moves inexorably toward its finale: the full-fledged Communist state.

Yet, when it happened, it came as a surprise. We expected something to break; Djakarta was unbearably tense, poised on the edge of crisis; but no one knew what form the next crisis would take. No one thought that Sukarno would go for the jugular—the Army—quite so soon. There was still plenty of time, plenty of other targets. Civilian anti-

Communist elements had been isolated but not liquidated. We suspected that Sukarno and the PKI would link "entry into the socialist stage" with announcement of a Communist-dominated "Nasakom Cabinet" and the removal of *civilian* bourgeois nationalists—the once-powerful Third Deputy Premier Chairul Saleh, the political gadfly Adam Malik, the leaders of the banned right-wing of the Nationalist Party, perhaps the fanatical Moslem students from the former Masjumi affiliate, the HMI. All had been under severe propaganda attack for some time and were rumored for imminent arrest. They were logically the next dominoes in the line.

Nobody hurries in Djakarta, especially to a showdown, but Sukarno chose this moment to break the rules of the game. Impelled by his ideological timetable, he must have believed that conditions were right for a dramatic move of historical consequence: a violent purge of the Army General Staff in preparation for establishment of a "People's Army" based on an armed worker/peasant militia and controlled by a political commissar system under the PKI. He had pressed for both throughout the year, but the Army had objected, and on September 1 he warned Army Commander Yani publicly that "the revolution was about to leave him behind." Had the move succeeded, a "Nasakom Cabinet" would have followed, then the arrest of other "counter-revolutionaries," eventually the seizure of land and capital by the state and the collectivization of agriculture, all hallmarks of the "socialist stage" in Communist revolutionary theory.

Instead, *insha'allah*, everything went awry, as is often the case on Java, and the Movement failed. Sukarno and the PKI, not the bourgeois nationalists, left the stage in disgrace and the latter in control. From the confusion of those exciting days have emerged many myths, in particular a set of generalizations about the origins and outcome of the event, which gained credence within some U.S. Government circles and especially "outside the wall" of classification. Simply stated, these generalizations were that (1) Communist China instigated the "PKI coup attempt" in an effort to "make an end-run" around the U.S. "forward-line" in South Vietnam, but (2) our decision to commit American troops in that country, signifying our readiness to block the southward extension of Chinese Communist power, stiffened the backbones of the Indonesian officer corps, and (3) bought sufficient time for them to crush their own Communist threat in a "massacre" which took the lives of some 350,000 or more party members at no cost to the United States.

These generalizations were based on inadequate data—all data was inadequate in the early days of the affair. They make Asian politics

sound like American football, and are suspect on that account alone. Yet they seemed logical in geo-political terms, especially at a time when Washington sought justification for the American stance in South Vietnam, and the Indonesians sought propaganda ammunition against Peking and the PKI. In Djakarta, however, we were particularly struck by the uniquely indigenous character of the events which led to the purge attempt and by the minimal influence on its outcome that could be ascribed to non-Indonesian factors. The geo-political generalizations about the incident, which I summarized above, clashed in our minds with a point that we felt was its strongest feature—that it was, from start to finish, a peculiarly and exclusively Indonesian phenomenon.

Half a decade has passed since the September 30 Movement collapsed, bringing down with it Sukarno's bloated edifice of words. Personal and institutional memories are growing dimmer. The time may thus be appropriate for a new, "inside the wall" look at the three generalizations produced in the public mind by its dramatic and arcane circumstances, in order to raise serious doubts about their validity before they come to conceal the real value of the Indonesian experience—the lessons of the September 30 affair.

Communist China

". . . damned clever, these Chinese."

—Unknown

In her study *The Coup that Backfired,* Mrs. Helen Hunter went a long way toward dispelling the myth of Chinese Communist involvement in the purge attempt. She concluded that while Peking had probably learned of the Sukarno/PKI plan, as indeed it must have through agent penetration of the Palace and the PKI, the Chinese did not instigate the plot or participate in carrying it out. The same conclusion is implicit in an earlier article in *Studies in Intelligence* on the September 30 Movement by John T. Pizzicaro.

Like us, the Chinese knew something important was imminent. But I doubt whether they could truly have comprehended the nature of the plot and its implications. By mid-September, too many actors had become involved in the drama, each interpreting the script in light of his own self-interest. I doubt whether Sukarno, let alone the Chinese, knew the Generals were to be liquidated, or the Revolutionary Council named as the "source of all state power." Even Sudisman, fifth-ranking leader of the PKI, subsequently stated under interrogation that the latter statement "was not part of the plan." Sukarno was unaware of the involvement of Colonel Untung from his own Palace Guards'

Regiment, because he had dealt only with PKI Chairman Aidit, Air Force Commander Omar Dhani, and Army General Supardjo who was in charge of tactical operations for the Movement. The PKI's "Special Bureau" chief Sjam Kamaruzaman, who planned the details, was actually proceeding under the incredible assumption that "if necessary, the President would be set aside."

Thus the participants did not have a unified concept of the affair, and the lines of authority among them were blurred from the outset. It is no wonder that General Supardjo told Army interrogators afterwards that when he returned to Djakarta from his post in West Borneo on September 28, everything was in chaos and "there was no clear chain of command." Whatever Sukarno's original instructions—probably couched in typical Javanese ambiguity—the thing had gotten badly out of hand, and had assumed an internal dynamic which no single participant, let alone a foreign observer, could understand or control.

A more fundamental brand of skepticism on the myth of Chinese involvement would arise if relations between the Chinese leaders, Sukarno, and the PKI were examined. The Chinese had little real leverage over Sukarno, or Aidit and the party. The two leaders were not the obscure protagonists of a minority faction in some little-known, unimportant country. Both were prominent figures on the international scene, aware of their power. They were vain, hyper-sensitive, paranoid chauvinists to whom foreign leaders had long catered, not dictated. The PKI in turn was the largest Communist party outside the Communist World. A good measure of Indonesian hyper-nationalism and mistrust of foreign powers laced all its activities and plans.

Sukarno was no "dupe of the Communists," Chinese or any other. He had towered over Indonesian political life for more than a generation, and claimed his own niche in the Marxist pantheon. In his speeches, he listed himself after Marx, Engels, Lenin and Stalin—but not Mao, who was still alive—as a prophet and "great leader of the revolution." He asserted that with his formulation of "Marhaenism" in 1926, he had discovered the theorem that revolution in a colonial country had to base itself on a broad national front including the peasantry, not on the industrial proletariat alone. Sukarno claimed to have made this discovery *before* Mao had reached the same conclusion. Both Sukarno and Aidit believed they were still breaking new ideological ground in "adapting Marxism to Indonesian conditions," and the party formally stated that "the teachings of Bung Karno are identical with the program of the PKI."

Their approach must have seemed to be paying off from Peking's point of view, and there was no reason for the Chinese to exert pressure on them for greater speed. The Indonesian revolutionary situation and Indonesian foreign policy were moving in a direction and at a pace which coincided with Chinese desires. At two junctures, Aidit even warned his colleagues that things were going too fast—a warning that later returned to haunt him when he failed to heed it himself.

In Indonesia, the "party of the Chinese" was Partindo, not the PKI. A tiny clot of left-wing extremists, the Partindo leaders drew their influence from their rapport with Sukarno and their interrelationship with the leaders of a powerful association of Indonesian citizens of Chinese descent called "Baperki." Both organizations followed the PKI line—Partindo in fact was often out in front—and had friendly relations with the Chinese Communist Embassy. The latter also influenced a number of *alien* ethnic Chinese businessmen's associations, which parroted the Sukarno/PKI slogans. Yet among all the participants in the September 30 affair no ethnic Chinese name appears, and the leaders of Partindo and Baperki were as confused as we were on the morning of October 1, 1965.

The PKI in contrast had virtually no ethnic Chinese on its personnel roster. Not more than a dozen Chinese names could be found among some 2,000 PKI biographic information cards at the American Embassy. The average PKI member often shared the same ingrained suspicion and animosity toward the Chinese as his non-Communist countrymen. The fundamental theme of Aidit's policy, and the main tool with which he had succeeded in rebuilding the party after the disastrous Moscow-induced Madiun revolt of 1948, was his effort to ensure that the PKI operated as a purely indigenous Indonesian institution. Recruiting efforts focused on ethnic Indonesians. Aidit and Sukarno were only too aware of the potential propaganda backlash that awaited any clearcut identification of the party with the Chinese, either domestically or abroad, in the Indonesian public mind. Aidit could scarcely have favored growing Chinese influence within his party, which might have aggravated factionalism and weakened the PKI before its adversaries. It might even have endangered his own position, since by "taking the parliamentary road" for thirteen years, Aidit had clearly been "following the Moscow line" in terms of the Sino-Soviet split.

For all these reasons, while the PKI made the fraternal and adulatory noises toward Peking and the Chinese revolution that one would expect from an Asian party, its leaders scarcely missed a suitable opportunity to express their independence of any Chinese influence.

It is out of the question for Sukarno or Aidit to have offered any outside power "a piece of the action" or requested help in the September 30 affair.

Vietnam

"Victory has a hundred fathers, but defeat is an orphan."
John F. Kennedy

The tendency to blame everything bad that happens in the world on Peking or Moscow is matched by the tendency to credit ourselves for all the good things. Both tendencies have clearly been at work in some interpretations of the September 30 affair and its outcome. Some people believe that the Indonesian Army would have been inclined to compromise with Sukarno and the PKI if its leaders were not aware that US forces had tied down the Chinese in South Vietnam by bombing the north and sending in the Marines. In fact, the Army *did* compromise with Sukarno for almost two years, though not with the PKI.

What options would have been available to the Chinese if the US presence was absent from South Vietnam? They could not have launched an invasion of Java since they lacked transportation and logistical support. They could have mounted an air strike on Djakarta, refueling at Hanoi, but the outcome would have been disastrous. The main victims would have been the predominantly urban ethnic Chinese in Indonesia. As it was, Peking's constant vituperation of the "right-wing forces," and its incitement of the Indonesian Chinese to rebel against them only aggravated the latter's troubles and reinforced Army propaganda that the PKI had been a Chinese tool. Whether the US stood firm in Vietnam or not, there was nothing that Peking could do—except take it on the chin in Indonesia as we had during the Sukarno years.

It has been argued, however, that while in objective terms the Chinese were clearly powerless to affect the situation by physical means, in psychological terms China was viewed as a potential threat after the purge attempt because of its great size and historical meddling in the area. Thus, the US barrier in Vietnam was said to be a meaningful integer in Indonesian calculations.

I would question whether many Indonesians were troubled by China's size. They believe Indonesia is the most important country in the world, and boast that the last time China invaded Java—in the thirteenth century—it was repulsed. In addition, I suspect that the whole effort to impute to Indonesian decision-makers any profound or strategic thoughts during those days of crisis is a great mistake.

Perhaps it would be useful in this connection to discuss in detail the turning-point in the events of October 1 itself—the juncture at which the keynote was sounded for the campaign against Sukarno and the eradication of the PKI—to determine whether thoughts of Vietnam or China were on anybody's mind.

The moment of decision came shortly after noon at Kostrad Headquarters on Djakarta's main square, where Suharto had assumed temporary command of the Army under standing contingency procedures. The two airborne "Raider" battalions that had deployed on the square earlier in the day in support of the purge attempt still surrounded Suharto and controlled key installations. Suharto was negotiating with their executive officers to get them to withdraw, and at the same time trying to size up the situation and find some reliable troops for himself. So far he had collected two platoons, plus ambiguous expressions of support from duty officers in the Navy and the national police.

Suharto was hurt and enraged at the clear probability that his close friend and patron, Army Commander Yani, had been murdered. Nasution, the Armed Forces Chief of Staff and its leading "strategic thinker," was in a nearby room. Best described later by a western diplomat as "a simple, ambitious coward," Nasution was paralyzed with shock and grief from the attack on his home. Far from being an asset to Suharto, Nasution had retreated at the crucial moment, as he had so many times before in crises when Sukarno was involved.

At this point, an emissary from Sukarno arrived. It was one of his adjutants, Marine Corps Lieutenant Colonel Bambang Widjanarko, who accompanied Sukarno when he drove out to join the anti-Army forces at Halim Air Force Base that morning. Widjanarko announced that he brought an order from the "great leader of the revolution" and was taken to Suharto. He told the Kostrad commander that Sukarno ordered him to turn over temporary command of the Army to Major-General Pranoto Reksosamudra. Pranoto was believed to be a PKI sympathizer, and Suharto knew him well. He had replaced Suharto in 1959 as Central Java Army Commander after an incident involving Suharto's family which had tarnished the latter's reputation.

Sukarno's choice of Pranoto to replace Suharto was a clear mistake. His use of a junior officer from an anti-Army service to carry the word made it a major blunder. The final touch came when Widjanarko belligerently demanded, according to those present, that Suharto "release" several key Generals and allow them to proceed to Halim for consulation with Sukarno. Suharto was already aware that several top Generals had been killed and others were missing. He went into a rage.

Speaking Javanese, he ordered Widjanarko to inform Sukarno that he was retaining temporary command of the Army until Yani's fate was known, that "no more Generals would go to Halim," and that *Sukarno himself should leave the Air Base as soon as possible because he was preparing to attack it.*

The impact and implications of that final clause may be difficult to sense for those who did not endure the long years of deference and propaganda adulation paid to Sukarno by all sectors of the population, including the Army. In effect, Suharto had challenged the power of a latter-day Javanese god-king. But the impact was not lost on Sukarno, who complied, probably unnerved by this singular act of defiance from a hitherto complacent, apolitical, obedient soldier. A test of wills had occurred, and Suharto had won. The news spread rapidly among the political and military elite, and Suharto was able to establish himself as the leader of the anti-PKI forces while the leftists remained in disarray "with no clear chain of command," as Supardjo subsequently noted. The Rubicon in contemporary Indonesian history had been crossed, and thereafter the tide of events moved irrevocably against Sukarno and the PKI.

What had provoked Suharto to throw down the gauntlet? He acted in rage, fear, and desperation. He felt keenly humiliated that Sukarno had sent a junior officer to order him about like a servant. He was incensed at the thought of surrendering his command for a second time to a hated subordinate, and feared that Pranoto's appointment meant his own name was on the PKI's liquidation list. He acted in the belief that he was serving the best interests of the Army, of his military comrades, and of Indonesia itself in standing up to Sukarno whatever the latter's power. All these motivations are reasonable to impute to a tense, puzzled, parochial but able field officer who felt that he alone had to hold the situation together in a crisis endangering the foundations of the state and his own future.

But he certainly did not act from a strategic or geo-political vision of the implications of the U.S. presence in South Vietnam in terms of the Chinese colossus to the north. It was a tactical situation; Yani was dead, Nasution had copped out, Suharto was senior officer present and commanding, and only he could take charge. That he did so without thought of the consequences explains much about him and his later success. Suharto merits our gratitude, not claims of a share in his victory because of our stance in Vietnam, for that moment alone.

The Massacre of the PKI

"We feared the great Communist chiefs; they had magic powers which prevented them from dying. No matter how much we beat them they did not die. We had to

> inscribe the letters 'PKI' on their skulls to prevent their hair from growing out again after we had scalped them. Some would not die even when we forced bamboo sticks into their eyes and mouths, or after we put out their eyes. Especially in the case of the great chiefs, we would put a live cat into their bellies; only then would they suffocate. The cat, symbol of the tiger, caused them to lose their magic powers, and they died."
>
> --quoted by Philippe Gavi, in an article entitled "Indonesia Days of Slaughter," in the Italian-language weekly theoretical organ of the Italian Communist Party, *Rinascita* (*Rebirth*), No. 7, Rome, February 16, 1968, pp. 15-18.

Foreign estimates of the number of PKI members and sympathizers killed as a direct result of the reaction to the purge attempt have ranged from 350,000 at the low end to 1.5 million at the high. The Indonesian Government has never issued an official announcement on the subject. In a recent article in the British publication *Government and Opposition* entitled "Indonesia's Search for a Political Format," Donald Hindley quotes the low-end figure in his text but adds the latter in a footnote. Hindley is guessing, for no one really knows. His citation of both figures, an ostensible effort to attain scholarly balance, actually begs the question whether very many were killed at all. Like the "Cornell group" dissected by John T. Pizzicaro in his recent *Studies in Intelligence* article, Hindley is forced by the ideological compulsions of the academic "new left" to maintain the polemical attack on the New Order regime, although he personally considers it, as he once told me, "the best government Indonesia has had."

Hindley's upper-range figure of 1.5 million was probably acquired from Miss Ruth McVey, the "PKI's biographer." Ruth was not in Indonesia at the time of the purge attempt, and had access only to journalistic sources in the months that followed. Yet by the spring of 1966, she had surfaced the figure of 1.5 million Communist dead at a New York meeting of the "Youth against War and Fascism" organization. This astonishing performance by an otherwise able and objective scholar clearly demonstrates how emotions have fogged the whole issue. How could the characteristically disorganized Indonesians possibly construct an efficient murder apparatus on this vast scale in a few months, and systematically exterminate almost one-third the number of people that the Nazi regime killed in ten years?

Following the purge attempt, Djakarta seethed with rumors and stories of bloodshed and terror. The Embassy was aware that this issue would loom large for some time and from the beginning we attempted to develop hard intelligence to put the subject in perspective. A preliminary look at the data showed, however, that even after the palpable boasts had been detected and discarded, what remained was spotty and inconsistent. No firm information on alleged killing of

Communists ever emerged from almost two-thirds of Indonesia's provinces. In addition, areas where one might have expected massacres of epic proportions—diehard anti-Communist West Java, for instance—were remarkably unstained with Communist blood. Yet in areas where the PKI had never won more than a modicum of popular support: in Atjeh, or the Madurese regions of East Java, the death tolls boggled the mind. One heard interminable lurid reports of mass killings in Bali, some 50,000 deaths or more, where the PKI had never succeeded in cracking the tightly-knit Balinese social structure or challenging the political domination of the Nationalist Party. Yet in the traditional PKI stronghold of Madiun, the seat of the 1948 rebellion which should have been the first target for liquidation teams, and where there were plenty of Moslems to do the job . . . all was calm. Not one PKI death was ever reported from Madiun to my knowledge. A curious pattern, and one that did not readily hang together.

It was thus not an easy task to determine an overall death-toll. Part of the problem derived from the local cultural imperative which we called "deliberate misleading of the outsider," but the Javanese call "*étok-étok*." To a Westerner, a thing is either true or false, an event either happened or it did not. This emphasis on objective reality seems dogmatic to a Javanese, who is more sensitive to the demands made on truth by the social context and his own socio-political status. Javanese seek to avoid potential conflict and embarrassment, and govern their behavior and remarks accordingly. The result is that they believe it is better to tell an outsider what they think he wishes to hear rather than risk the unpredictable consequences of telling the truth. This generalization does not pertain to all social situations, but is the cultural model for what Javanese believe social intercourse should be.

In reviewing the documentary evidence of the so-called massacre, I felt it was obvious that considerable *étok-étok* was involved. The same was true as I inquired among my contacts in the military and elsewhere, seeking a viable nation-wide estimate of Communist deaths to report to the Department. I found an abundance of exciting, self-serving tales, told with averted eyes, as though the ghost of D. N. Aidit were lurking in the background. Rather than acting like members of a "conspiracy of silence," most people were "protesting too much" of their ruthless anti-Communist zeal. But they could not produce hard data, lists, names and places, photographs, or any indication that some Indonesian government bureau had been tasked with tracking down and collating the stories in a systematic and objective manner. It was true that Sukarno had directed several of his Ministerial flunkies to survey Java in November, 1965 to obtain information for use in his

effort to stymie the anti-Communist bandwagon. But their estimate of 87,000 stemmed directly from political considerations, and had to be rejected on those grounds.

Finally, a Lieutenant Colonel in the Army's Supreme Operations Command's "Social-Political Affairs Section" passed me some figures which he swore were accurate compilations from field reporting. The totals were 50,000 dead on Java; 6,000 dead on Bali; 3,000 in North Sumatra. I was skeptical of his methods but accepted his estimates, *faute de mieux*, and combining them with my own data produced a nation-wide total of 105,000 Communist dead. Admittedly a large figure, it was still a far cry from the claims of 350,000 to 1.5 million victims being bandied about, and at least had partially resulted from a systematic effort.

While the death toll appeared lower than generally believed, the net impact on PKI cohesion and capabilities remained the same. The climate of fear and suspicion that arose in the villages as a result of the widespread rumors of mass killing effectively impaired PKI courier communications, obstructed party meetings, and thus paralyzed lateral coordination and control. Concurrently, the Army seized the central PKI publications apparatus and captured a majority of the Central Committee membership within a few months, thus blocking dissemination of instructions from the top. The PKI's two strongest features apart from identification with Sukarno, its organization and communications, were thus nullified, and its destruction as a cohesive political force was assured.

By April of 1966, conditions were settling down and the Army relaxed its restrictions on travel. At the first opportunity, another Embassy officer and I left on a trip through Java seeking first-hand intelligence information on a variety of subjects. Among other things, because of my conclusions mentioned above, I hoped to learn something about the alleged severe killing in East Java which had been described in news items filed by Mr. Stanley Karnow of the St. Louis *Post-Despatch*.

Karnow was an unusual correspondent among the many who came to Indonesia at that time. He actually visited the areas about which he wrote. He interviewed at length the Army Commander of the Kediri district of East Java, Colonel Willy Sudjono. The Colonel had filled his ears with gory details and astonishing death-tolls, including a remark that the Brantas River—which flows past Kediri town—had been "choked with 30,000 Communist bodies." From a previous trip to Kediri, I remembered the Brantas as a broad, placid stream, its bed raised above the level of the surrounding countryside by years of

diking and overflow, somewhat in the manner of the Hwang Ho of China. It occurred to me that 30,000 bodies floating down the Brantas would have jammed the gates of the numerous irrigation dams that span the river, causing a severe flood in Kediri town.

In any event, I was anxious to learn just what had happened in Kediri, a fascinating area of marked importance in Javanese history and politics for centuries. It was the seat of an early Hindu-Buddhist kingdom whose legendary ruler produced a set of prophecies which became a central feature of the Javanese political mystique. Javanese believe that Kediri stands at the center of a peculiarly potent combination of necromantic and mystical geo-magnetic forces. The area in consequence has generated peasant-based millenarian movements for hundreds of years. Prince Diponegoro of Jogjakarta went to Kediri to meditate in a cave before he fomented a messianic revolt against the Dutch in 1825. Sukarno always played up his early boyhood in Blitar, near Kediri, and had requested to be interred there. Before the 1965 purge attempt, Kediri was a Sukarnoist/PKI stronghold, as one might expect where severe ethnic (Javanese vs. Madurese) and religious (reformist Moslem vs. animist) antagonisms intersected in a setting that contrasted large land-holdings with abysmal poverty. Here were all the contradictions which provided, for Sukarno and the PKI, the exploitable corridors of power.

In April, 1966, another Embassy officer and myself spent several days at the home of an American Baptist missionary docter and his wife in Kediri. The Baptist mission and hospital were established in Kediri just after the war. They were readily accepted by the nominal Moslem Javanese of the area, who probably saw the Baptists as just another mystical sect drawn to Kediri by its potent ethereal forces. There were eight American families, and many "national preachers" — local converts who helped spread the gospel—at the Baptist establishment. They enjoyed excellent relations with local officials and had made many friends in the villages of the area. Every morning, Javanese from all social classes lined up in front of the hospital for medical treatment. Obviously the Baptists were well-attuned to the local environment.

From several days' talks with the Baptist group and other local informants, an interesting picture of Colonel Willy Sudjono emerged. He had lost several relatives fighting on the Communist side at Madiun in 1948. He was also known as a staunch Sukarnoist and devout follower of the pro-Communist East Java mystical sect leader, mBah Suro. Before the purge attempt, he had not obstructed the Communist advance. The missionaries remarked that during the August 17,

1965 National Day celebrations, PKI organizations marched down Kediri's main street for hours, some of them armed, while Willy Sudjono watched and smiled. Yet the missionaries did not believe he was a Communist himself. They had requested troops to protect the hospital against threatened PKI attacks on several occasions, and he had always complied. Sudjono's family came to the hospital for medical treatment and health exams, as did many of the local officials of the area. Obviously there was more to his story than Karnow had learned.

The missionaries and their local contacts had heard many stories of mass killing in the surrounding area, including the tale of "30,000 bodies choking the Brantas River." One night, according to a missionary wife, they heard the *gamelans* (traditional musical instruments) "pounding from darkness till dawn." They presumed that killing was underway, and that the music was intended to cover the sound of screams. They were surprised that fanatical Moslems would choose to kill by *gamelan* music, a non-Moslem, Hindu-Javanese cultural manifestation. But the next morning, everything was calm. As the Baptists went through nearby villages, there was no sign of slaughter. In fact, although they preached and dispensed health care in the area throughout the period of the purge attempt and its aftermath, none ever saw a Communist body, in the Brantas or elsewhere. Whenever they asked village contacts about the subject, they were always told that "there were no PKI members in this village and no killing here, but many dead at the next village down the road." But at the next village, the answer was the same: "no PKI, no killing here."

A press correspondent who spent a month on Bali searching for evidence of the mass killing for a feature story told me that he had gotten the same answer in village after village there. Moreover, he pointed out, neither he nor his colleagues had ever managed to photograph a Communist body. To this day, I myself have never seen even one photograph of a PKI corpse.

The missionaries' story was confirmed by other local informants, who believed that most of the Communist leaders had fled to Surabaja after the failure of the purge attempt, while the peasant masses who had supported the party because of its identification with Sukarno simply melted away. What killing had occurred, they said, had been on a minor, ceremonial scale.

Thus, there must have been considerable *étok-étok* in the story Willy Sudjono told Stan Karnow. He had done nothing to slow down the PKI in his jurisdiction before the purge attempt. As a known Sukarnophile and mBah Suro devotee, the onus was on him afterwards to demonstrate his loyalty to the Army. He must have welcomed the

chance to proclaim to Djakarta through an American journalist that his severity toward the party after the event had known no bounds.

How many other local military commanders and district officials had been under the same pressures after the purge attempt? Virtually all of them were imbued with Sukarno's "Nasakom" sloganry, including the policy of collaborating with the PKI. What better way to display their newly-discovered anti-Communist colors, without committing themselves to Suharto or Sukarno while the Djakarta power struggle was unresolved, than by inflating the numbers of PKI killed in their jurisdictions? How many opportunistic politicians sought to erase years of riding the PKI's coat-tails by proclaiming responsibility for a few unverifiable Communist deaths? The IP-KI Party leader Lucas Kustarjo, for instance, though a long-time Sukarnophile, boasted everywhere that he had told Sukarno personally that he killed "300 PKI leaders with his own hands."

Like the politicians and military leaders, the average village citizen had shrewd motivations for concocting massacre tales. If a villager told the authorities that his Communist neighbor had escaped, he risked guilt by association, or at least faced the prospect of a harangue on the importance of "heightening vigilance against the PKI." But if he told the authorities that his Communist neighbor had been killed by the "spontaneity of the masses," he would receive a pat on the back--perhaps even his neighbor's house or land. Who could check the story? The Army has never been able to keep track of its own personnel, let alone the civilians on over-populated Java.

As the reports of massacres moved up along the chain of command, they could easily have been embellished and magnified as successive layers of officialdom sought to display their own anti-Communist zeal. The natural tendency was to accept them at face value, especially among the Western correspondents who flocked to Djakarta in search of sensational copy for lurid feature articles to cable to the outside world. The result was the myth of the massacre. A good part of it must have been *étok-étok* by everyone concerned.

The Future

"We are independent now. Independence was not granted as a gift from our former colonisers, but we have won it the hard way at a great loss of lives on the part of all the Indonesian people for more than hundreds of years. We have a state philosophy and a Constitution which are not of foreign make but the products of our own inquiry into our own identity and our own history, formulated by Indonesian leaders and Indonesian philosophers. Our Armed Forces are not an inheritance, but have emerged from the midst of a fighting nation . . . all these

things are not just the legacy of the days prior to our independence. We have done them ourselves."

—President Suharto, on the eve of the 25th anniversary of Indonesian independence, on August 16, 1970.

No one will ever know the truth about the September 30 affair. By posing some questions about the myths that have evolved in the public mind in regard to the events that preceded and followed it, I hope at least to have signalled the danger of swallowing them whole. Whatever the popular misinterpretations of newsmen and scholars, "inside the wall" we should not be misled by the need to practice our own form of *étok-étok* to justify the policies of the past. Instead we should look to the real and valuable lessons which this watershed in contemporary Southeast Asian history has provided for the future.

To the strategic thinkers of the outside world, Southeast Asia, like the Balkans, has always looked like a power vacuum about to implode. Like the Javanese area of Kediri, one might almost say, Southeast Asia has loomed as a center of mystical forces, time and again attracting foreign powers to meddle in its murky affairs in the hope of gain—or occasionally in the hope of obtaining the gratitude of Southeast Asians themselves. But time and again the outsider has seen his efforts go unappreciated, his motives mistrusted, and his departure awaited with eager pride. Too often the reason has been the outsider's inability to see things through Southeast Asian eyes.

Human and interstate relations in Southeast Asia do not occur under ideal laboratory conditions, and the course of events is seldom predictable at a distance by analysis of national interest and balance of power alone. The "strategic planners" who prefer to "focus on the big picture in Asia" to produce sweeping, unverifiable geo-political theories run the risk of overlooking some quirk of human behavior that can easily upset their most sophisticated calculations and ideas. In Indonesia in 1965, the last domino refused to fall, and the tenets of the domino theory proved irrelevant to a major historical change. The course of events turned instead on the personality of one man, as the massive door of a vault pivots on its tiny jewelled bearing. Without the example of Suharto's courage in defying Sukarno, a thousand similar acts of decision would not have occurred elsewhere in the archipelago, and the whole "strategic situation" in Southeast Asia would not be the same. Suharto and his supporters were not concerned with the "big picture," or with conditions in other countries of Asia. They had enough to do with their own "little picture," and concentrated on the job to be done and the people involved. As a result, they won. The PKI was destroyed in the villages of Indonesia, not by the American "forward line" in Vietnam.

In Washington things tend to become unreal. Human beings are sometimes viewed as little more than names passing in the stream of paper, unrelated to their past and future. Far from the scene, we are often prone to see Asia impersonally as a cosmic chessboard, where the great powers can conduct their broader strategies without much regard for the pawns. But the pawns too are people, and the human factor is always the key, as it was on the morning of October 1, 1965 in Indonesia. To be truly viable, all strategic theories based on sophisticated geo-political ideas must also take into account the prospect of those sudden, unexpected acts of human courage and decision which, precisely because they were not a part of preconceived plans, alter and illuminate political affairs.

The origins and outcome of the September 30 affair were the result of Indonesian actions alone. By the time the great powers realized what was underway, it was too late to help or hinder either side. Washington could only watch and wait, and hope that when the situation jelled, a new and more constructive relationship could be established with whatever regime survived. Then—but only then—could we offer to help, after the fever had broken and the patient was already on the road to recovery.

The Indonesians were acutely aware after the overthrow of Sukarno and the PKI that the road to recovery meant turning inward to repair the economic deterioration that had contributed significantly to Sukarno's success in orchestrating the Communist march toward power. Indonesia rejected Sukarno's mad schemes of leading the "third world" in a crusade of bluff and bluster against the "imperialist powers," and focussed its attention on its own sad internal plight. Suharto blocked a reversion to unproductive political infighting, and placed the stress of government policy on combatting inflation and preparing the base for economic development. The first battle was won and the development effort shows great promise for the future, although severe challenges remain.

In the wake of the September 30 affair and its aftermath, the lesson of the Indonesian experience began to make itself felt. It was at the heart of the American "low profile" approach to Indonesian efforts to bring their runaway inflation under control. Although advice from the International Monetary Fund and assistance from foreign donors were important, the essential decisions were made by Indonesian economists and implemented because of Suharto's resolve. American involvement was kept to a miminum. The low-profile approach also led to our "hands-off" attitude when the Indonesians were attempting to round up expatriate Sarawak Chinese dissidents in West Borneo in 1967, and to

quell an embryonic PKI insurgency effort in East Java the following year. In the first case, Indonesians and Malaysians combined their efforts; in East Java, only a few weeks were needed for the Indonesians to handle the job themselves. In both cases, American involvement would have lent credence to Communist propaganda, and impaired indigenous resolve.

In the larger context, the Vietnamization idea and the "Guam Doctrine" can be seen as efforts to employ the lessons of the September 30 affair in structuring an appropriate American posture for the region as a whole.

Comparisons of what happened in South Vietnam and Indonesia after the critical year of 1965 make it clear that American power can only complement and augment indigenous resolve—the quality that the Indonesians call "national resiliency," which can be generated through local leadership and enhanced through regional cooperation, but not created or replaced by vast infusions of men and money from abroad. The human factor is always the key.

Very few now believe that the "soft states" of Southeast Asia can manage to survive as independent national entities without massive American help in view of the geo-political menace of Communist China to the north. Yet who among us would have believed—on that hot morning of October 1, 1965, as we drove toward the Embassy between the endless red banners and lurid anti-Western posters along both sides of the main highway into Djakarta, to face yet another day of systematic humiliation by the minions of Sukarno and the PKI—that actions and events were already underway which would reverse the course of years of Indonesian history in a matter of days? The Indonesians looked into the abyss, recoiled, and learned their lessons well. Their task and ours is to use those lessons equally well in the future.

Deception techniques,
Hanoi-style.

COMMUNIST DEFENSE AGAINST AERIAL SURVEILLANCE IN SOUTHEAST ASIA

Edward F. Puchalla

The art of deceiving or confusing aerial surveillance is virtually as old as the airplane. Techniques of deception developed greatly during World War II when all parties devoted considerable efforts to concealing or disguising troops, weapons, industries, and even cities. In the Far Eastern conflicts of the past two decades, less sophisticated, but nevertheless serviceable techniques have been employed to the same ends. In particular, the war in Southeast Asia has produced extensive and at times ingenious attempts at deception.

Communist forces in North and South Vietnam, Laos, Cambodia, and, more recently, Thailand, have relied heavily on deception to conceal their activity. Despite continual aerial reconnaissance and airstrikes, the North Vietnamese have supported insurgent wars in four countries and withstood daily bombardment of supplies and facilities within their own country. It would be impossible in a short paper to review all the environmental conditions and military equipment involved in all four countries, and our object here is rather to provide a representative sampling of the deception techniques identified in photography since intensive coverage began in 1964. Most of our examples are from North Vietnam, where bombing was intense during the 1965–68 period. The photography we will present was taken from low-flying, pilotless drones, tactical reconnaissance aircraft, such as the RF 101 and RF 4C, and from high-flying U–2 aircraft.

Deception

In much of the literature on the subject, the term "camouflage" has often been employed imprecisely to refer to all types of deception. Moreover, the term has been used to refer more or less indiscriminately to concealment, decoys, and deception. Here, we will follow the working usage of photo interpretation and employ "deception" as the generic word for any stratagem employed to confuse or mislead the enemy. From the viewpoint of aerial reconnaissance, either visual or

photographic, deception may take the form of concealment—the hiding or obscuring of objects in an existing environment without resort to further artifice; of camouflage—the application of natural or artificial materials to an object or surface with the intention of concealing, obscuring or generally misrepresenting the appearance to an aerial view; or of dummy decoys—simulated objects and installations or feigned activities created to divert attention from a genuine target or activity. In addition, the intense bombing of North Vietnam and Laos produced a fourth technique of deception, that of dispersal and innovation [1] —the practice of making obvious targets difficult to destroy.

The task of the photo interpreter would be greatly complicated if it were possible for the deception specialist to control all elements of his work. Rarely, however, is such control possible, for operational requirements and laxity in discipline impose serious limitations on the effectiveness of deception measures. Obviously, operational requirements determine the placement of most military objects. A radar is useless unless sited where it can be operated effectively. A base camp hidden in the jungle must have water, and a supply depot must have transportation routes.

Deception discipline varies according to training and combat conditions. Thus, in a stable situation, time may permit more complete and ingenious deception measures than would be possible in a rapidly changing one. In Vietnam, under constant harassment from allied airstrikes, the Communist troops quickly resorted to improved deception techniques as a defensive measure. Since, however, men and machines leave traces on the ground, defensive positions require digging, and trees must be cut for access and for fields of fire—all of these and other activities are virtually certain to provide some clues for the camera to record.

This paper discusses the various techniques employed by the Communists in Southeast Asia as they apply to eight basic activities: antiaircraft and coastal defenses; aircraft and air installations; naval combatants and merchant ships; radar and communications; military facilities; POL facilities; transportation; and urban and industrial facilities.

[1] Dispersal and innovation refers to the practice of constructing or duplicating several decoys, or in some cases *bona fide* targets, and dispersing them in random fashion, near a known target or activity. For example, several road bridges and bypasses may be constructed and camouflaged at a major river crossing in order to make it difficult to identify the main bridge.

Antiaircraft Defenses

When complete concealment of an antiaircraft site in an existing environment is not possible, camouflage measures become necessary. These may vary from simple field expedients, such as placing a few branches over the site, to construction of an elaborate disguise for the weapons.

The intense allied bombardment of military activity during the early stages of the war was met with determination by the Communist deception specialist seeking to protect what the allied pilots were attempting to destory. The camouflage objectives were to cover track activity, weapons, and support equipment. In camouflaging antiaircraft sites in heavily defended areas, the North Vietnamese have relied on the constant movement of equipment from one site to another in order to reduce the possibility of identification and subsequent interdiction. For instance, the numerous revetted sites in the Hanoi and Haiphong areas were alternately occupied and abandoned throughout the 1966–68 period. Sites located in smaller villages and agricultural areas were permanent and tended to be camouflaged at least to the extent of covering the weapon with foliage or garnished netting. Placement of vegetation in these areas helped to conceal the track activity. Quite often the revetments would be covered with freshly planted vegetation presenting a "salt and pepper effect" [2] when viewed on aerial photography (See Figure 1).

A particularly ingenious and effective camouflage technique was identified north of Hanoi in December 1967. Analysis of photography at that time revealed several probable 37mm antiaircraft weapons permanently emplaced within a circular revetment with dome or cupola-like coverings over each emplacement (See Figure 2). This technique affords considerable concealment, the weapon being protected by an earthen revetment and concealed completely with the exception of the gun barrel which protrudes through a slit in the covering and is camouflaged with vegetation. Depending on the nature of the materials used, this structure may also give some protection against bombing and strafing.

It seems probable that these cupolas rotate with the weapon. That is, the cupola framework appears to be supported by or attached to the rotating platform of each weapon. Although the barrels were photographed in stationary positions pointing in different directions it does not seem likely that the weapons would be connected to such a limited field of fire by permanent coverings. The only alternative

[2] This phrase refers to the regular pattern of planted vegetation which contrasts sharply with the surrounding natural vegetation.

to the rotating cupola would be that of using the coverings for environmental protection and removing the cover when the weapons are in operation.

Dummy/decoy antiaircraft weapons have also been detected in North Vietnam. They are usually constructed in the form of small A frames, probably of wood with large poles placed on top at a slight angle to simulate gun barrels. Partial camouflage has been added to several of these sites to enhance their verisimilitude (See Figure 3).

Surface-to-Air Missile Sites

Perhaps the best deceptive technique employed in the North Vietnamese antiaircraft defenses is found at camouflaged, field-deployed, SA–2 missile sites, first observed in February 1966. More than half of the approximately 369 sites identified prior to the bombing halt in November 1968 were unrevetted. The sites have been found on plantations (Figure 4), in and around villages, and within destroyed and abandoned military barracks areas (See Figure 5). The environmental pattern is usually left undisturbed as far as possible to take advantage of the natural cover, and the vans and missiles are often covered with natural foliage. The sites are occupied for only a short period of time and then abandoned. When the more obvious revetted sites are occupied, the equipment is camouflaged with foliage and garnished netting. The missiles and related equipment are highly mobile but are seldom detected in storage, principally because of the effective use of camouflage (See Figure 6).

A less important but equally effective deception technique is the use of dummy/decoy missiles. Various artificial materials have been utilized including inflatable rubber dummy missiles, but such sites lack the fidelity found at the dummy antiaircraft sites. Figure 7 is an example of one of the better dummy/decoy sites found in North Vietnam. The lack of deception discipline is readily discernible when one compares Figure 7 with Figure 8, which lacks sufficient fidelity to be effective.

Coastal Defense Sites

The majority of revetted coastal defense sites distributed along North Vietnam's shores have utilized one or more deception techniques. In the past the most widely used form consisted of a semipermanent open emplacement partially concealed by foliage. More recently, the emplacement has been dug into the sand or back beach area, and covered by garnished netting or bamboo matting laid over a supporting structure of poles. A small amount of sand, natural foliage and

tree branches is placed on top and vegetation planted around the emplacement to help blend with the surrounding scrub brush and trees. When completed, the bunker-type emplacement is quite difficult to detect on photography and probably more so visually (See Figure 9). There have been several examples of caves dug into overhanging cliffs providing good concealment and field of fire for the weapons. However, spoilage from such excavation is readily apparent and difficult to camouflage.

Aircraft and Air Installations

Extensive camouflage and dispersal of North Vietnam's air force dates from April 1967, when allied airstrikes against major airfields began. With a few exceptions, there was no attempt at deception prior to that time. Dummy/decoy swept-wing aircraft were identified in February 1965 (See Figure 10), and some use of natural camouflage was detected in September 1966. For the most part, however, the aircraft inventory could be easily ascertained from the revetments and hardstands at the airfields. Since mid-1967, however, the North Vietnamese have used a variety of means to protect the aircraft and prevent any accurate count of the current air order of battle. Aircraft remaining at airfields were heavily camouflaged. Other aircraft were dispersed to remote areas that appeared inaccessible due to the lack of roads and track activity. Five MIG aircraft were observed in a remote field adjacent to Phuc Yen Airfield in late 1967, suggesting they may have been transported by HOOK helicopters. At Haiphong/Cat Bi Airfield in August 1966, 2 camouflaged MIG aircraft were identified within a storage area located approximately 1.5 nm northwest of the runway. The unusual location of these aircraft suggests they also were transported by HOOK helicopters (See Figure 11).

Dummy/decoys may be designed to mislead air crewmen, the photo interpreter, or both. The fidelity of the dummy will be governed largely by the purpose for which it is constructed. Very crude replicas may be sufficient to divert the attention of the fast-flying pilot, whereas only the best of replicas accompanied by features usually associated with the authentic installation will mislead the photo interpreter. The time interval during which a dummy/decoy is meant to be effective will also influence the necessary fidelity of the replica and its associated signatures (accompanying features). Dummy aircraft observed at North Vietnamese airfields range from crudely built models, easily recognizable, to high fidelity ones. A dummy/decoy fabrication area was observed in October 1967 at Hanoi Bac Mai Airfield. The wing, tail, and fuselage sections seen were nearer the

actual size of MIG aircraft than many seen elsewhere, indicating that the North Vietnamese intended to improve this form of deception.

Several well constructed dummy/decoy delta wing aircraft, probably constructed of wood, were identified at Hoa Lac Airfield in July 1967 (See Figure 12). Although realistically constructed, discrepancies are apparent when the length-width ratio of these dummies is compared to the known dimensions of the aircraft revetments they were parked in.

Several types of hangarettes have been observed at six different airfields in North Vietnam—some as early as October 1967. They consist of fabricated metal or wood supporting beams with metal, canvas, or thatch covering. Some of the hangarettes are revetted to provide additional protection from bombardment. This particular type of concealment had a distinct advantage for the North Vietnamese, since it prevented allied intelligence from estimating accurately the numbers or type of fighter aircraft stationed at these airfields. Figure 13 illustrates a typical hangarette in the early stage of construction. The supporting beams in this photo resemble construction materials that were given by the Soviets to the East German Air Force for the same purpose. The lower photo illustrates a hangarette nearing completion. An earthen revetment will be added for additional protection.

Also at Hoa Lac Airfield another deception technique was identified—dummy bomb craters painted on the runway to represent bomb damage. These images lack shadows, do not follow typical bomb pattern and, when viewed stereoscopically, lack depth. In addition, the high reflectivity of the freshly applied paint and variances in tonal quality are apparent when compared to the fresh soil debris thrown up by real bombs (See Figure 14).

The helicopters in the North Vietnam inventory are rarely observed at airfields. Since late 1966, they have been dispersed to remote agricultural areas and occasionally were very artfully camouflaged with foliage and garnished netting (See Figure 15). Several HOUND helicopters were observed dispersed adjacent to active native villages in late 1967. The practice is still widely in use.

Naval Combatants and Merchant Ships

Owing to their distinctive shapes, ships and boats usually present a very difficult problem to the deception specialist. The larger ships rarely can be adequately disguised and the effectiveness of deception methods applied to small craft depends in large part on the surroundings.

Measures commonly used to conceal and camouflage vessels in North Vietnam and the inland waterways of Laos consist of garnished netting, vegetation, natural or simulated, and disruptive paint work for distorting the outlines of the hull and superstructure.

Early allied airstrikes against naval vessels in mid-1964 caused considerable damage. After that time, it became more difficult to locate the significant combatants and large supply vessels. Extensive use of natural vegetation as camouflage was universal along the coast and the inland waterways. In mid-1968 natural and man-made caves located at off-shore islands were identified as probable concealment areas for North Vietnamese combatants. Photographic mensuration has shown that several of these caves are as large as 70 feet wide and 50 feet high, sufficient to conceal North Vietnam's largest naval combatant, the S.O.1 subchaser.

In dispersing combatants, the North Vietnamese moved their vessels into the northeast island area and along small rivers in the Haiphong and Hanoi area. They attempted to camouflage some of these with garnished netting and foliage in an effort to make them appear as an extension of the island to which they were moored (See Figure 16). Along the rivers, the vessels were moored to the heavily vegetated bank or in small, specially dug slips and canals (See Figure 17). In all cases, natural camouflage was added to the deception.

In August 1964, shortly after the much-publicized Tonkin Gulf incident, several of the North Vietnamese naval craft that were bombed and strafed were detected using smoke pots in an attempt to lead allied aircraft pilots to conclude that they were already damaged and burning (See Figure 18). Analysis of photography of these incidents revealed that this deception was quite successful.

The usual procedure in camouflaging merchant vessels is to cover them with foliage, sometimes over a framework of wood or bamboo, and netting. In the case of POL vessels, the cargo is simply covered with canvas to make the craft appear to be like any of the countless small barges and sampans observed on the rivers throughout the area. Ferry boats are usually moored a distance away from the actual crossing in addition to being heavily camouflaged with tree branches (See Figure 19). Several merchant vessels have been observed with disruptive paint designs on the hull and superstructure (See Figure 20).

Sampans of 40 tons capacity have been detected carrying POL tanks concealed under a canvas covering (See Figure 21). Since thousands of sampans are in use on North Vietnam's intercoastal

waterways, this expedient is of unquestionable value to Communist logistics.

Radar and Communications

The North Vietnamese have made perhaps their biggest operational sacrifices for the sake of camouflage with respect to radar and communications facilities. Elevation and an undisturbed horizon are usually required for optimum performance of both systems, but for radar sites, the North Vietnamese have consistently chosen wooded areas or villages to conceal their equipment (See Figure 22). To increase the deception, they are also willing to cover the radar antennas with camouflage materials such as canvas, garnished netting and foliage (See Figure 23). However, sites placed in more logical surroundings can still display a degree of deception. An air warning radar site was detected on an exposed beach area near Badon, North Vietnam during 1966. The simplicity of facilities and lack of track activity provided an excellent example of deception (See Figure 24).

A camouflaged radar site situated on a mountain top at Nui Vien, North Vietnam was difficult to detect because of a total absence of associated tract activity leading to the facility. A detailed analysis revealed the site was being supplied by helicopter, even to the extent of transporting the radar equipment and a K–32 crane truck to the mountain top site. The TOKEN-type radar at this site was camouflaged with garnished netting.

Because of their relatively small size, communications facilities are difficult to detect. The North Vietnamese compound the difficulty by locating sites in or near villages, and by periodically abandoning and reoccupying them.

Military Facilities

Although concentrations of Communist Vietnamese personnel offer first-priority targets for air attack, they seldom are detected directly by photoreconnaissance, and then only through surprise or during very fluid situations. Concentrations are discovered mainly through photographic detection and identification of personnel housing facilities. Deception measures for these facilities consist mainly of camouflage, since concealment alone is rarely adequate and decoys are not practical.

In the development of deception measures for temporary shelters (dugouts, semiburied buildings, and tents), the North Vietnamese have concentrated mainly on concealment, though seldom without supplementary camouflage. The dugouts and semiburied buildings

usually are covered by sod or other vegetation and, when skillfully sited in the terrain pattern, are difficult to detect.

The North Vietnamese deception specialist faces a major problem in developing effective deception measures for permanent or peacetime barracks, since the buildings usually are of a uniform design and are arranged in a regular pattern. Moreover, they are frequently situated at established military bases, about which allied intelligence usually has considerable information from other sources. Under these circumstances, deception measures aimed mainly at confusing aircrews seldom can do more than tone down the more conspicuous features through the use of such camouflage media as paint, netting, vegetation and debris. Most of the permanent North Vietnamese barracks and storage areas which were not destoyed by airstrikes prior to the bombing halt have remained abandoned. Supplies continue to be stored within the sanctuary of villages or in areas that provide natural tree cover.

In Cambodia, Communist Vietnamese forces have taken excellent advantage of the dense jungles and absence of aerial bombardment to construct numerous widely dispersed storage and support facilities (See Figure 25). Considerable effort is expended to conceal evidence of trails or vehicular tract activity leading into these installations. Figure 26 illustrates a similar pattern of dispersed facilities in Laos. However, when compared to the facility in Cambodia illustrated in Figure 25, the lack of deception is very apparent—the buildings and service road in the Laos facility are clearly visible and subject to easy detection.

Occupied storage buildings in North Vietnam are usually covered with foliage. In some cases, vegetation is planted on the roads to conceal track activity (See Figure 27). There are occasional instances of disruptive painting, particularly on storage buildings, but the practice is not prevalent (See Figure 28). The North Vietnamese have expended considerable effort to preclude detection of cave storage facilities by camouflaging the entrances. However, excavation spoilage is usually a reliable signature that is difficult to conceal. A more recent technique observed in North Vietnam is the stacking of supplies in a rectangular pattern several feet high and near a motorable road. A thatch roof is then constructed and placed on top of the supplies making them appear as a native dwelling.

POL Facilities

POL storage practices in North Vietnam underwent a complete change after bombing of POL installations began in June 1966.

Instead of the several large facilities of the prebombing era, more than 500 small tank and drum storage areas were widely dispersed throughout the country prior to the bombing halt in November 1968. These small facilities range from drums temporarily stored under trees to permanently buried tanks (See Figure 29). Drum storage has been identified along roads, in villages, and in trenches partially concealed by trees. The tanks, which vary in size from six to 25 metric ton capacity, have been observed bunkered or partially buried. One innovation has been to bury the tanks randomly in a cemetery. In normal circumstances a photo interpreter would of course usually expect to see excavations in a cemetery—but not large POL tanks lying opposite the excavations. It may be that North Vietnamese logistics and deception specialists felt that allied air crews would be unlikely to bomb cemeteries, and that these would therefore offer privileged sanctuaries for POL supplies. We have no photographic evidence to indicate that cemeteries in North Vietnam were in fact struck prior to cessation of bombing.

Transportation

Since mid-1963, Communist forces in North Vietnam and Laos, and more recently in Cambodia, have employed a variety of deception techniques in order to conceal and camouflage new roadways. Because these vital infiltration routes are difficult to maintain and are of course vulnerable to airstrikes, Communist road construction teams have depended heavily on long stretches of tree canopy to cover extensive segments of new road which must be constructed in stages. Climatic conditions in Southeast Asia have in this respect helped the Communists, since the rapid regrowth of vegetation provides a steady supply of cover material that can be utilized for concealment or as natural camouflage.

In August 1965, Communist road construction crews were observed in Laos attempting to conceal exposed segments of a new road under an overhead canopy of bamboo and natural foliage (See Figure 30). This arbor-type trellis[3] was easily detected on aerial photography because it inadvertently created a distinctive grid pattern that contrasted with the surrounding heavy foliage. As a result, camouflage

[3] The trellis utilized to conceal roadways in Laos is basically a series of upright supporting poles that form an arbor-like structure somewhat similar to flower arbors found in gardens throughout the United States. The arbor supports a lattice work of bamboo matting which in turn is covered with freshly-cut foliage and vegetation from the immediate area. The structure is high enough to allow passage of 2½ ton cargo trucks.

techniques employed by the Communists, such as the trellis, had a reverse effect by revealing the exact road alignment.

Conversely, rail sidings, turning wyes, and even full trains have been hidden by the trellis technique. A variation of the trellis is used in camouflaging bridge piers and abutments to blend in with the associated road or rail bed (See Figure 31).

Under normal conditions, a heavy tree canopy will effectively conceal the road alignment and can be improved by tying the tree tops together. This technique has been used to help conceal activity such as truck parks, rail sidings and storage facilities (See Figure 32). Some of these road spurs and rail sidings have been extended into villages for additional concealment.

Rail bridge approaches and rail sidings, including the crossties, have been covered with excessive amounts of ballast for camouflage. The result completely obscures the rail line and is very effective for insuring the continued operation of the multiple rail bypasses that are usually constructed near choke points.

The necessity for camouflaging river crossings has led to another ingenious deception technique, the vehicular cable bridge (See Figure 33). Cables which span the river crossing point from concrete anchorages embedded in the ground, are covered with decking for nighttime and occasionally daytime vehicle transit. Usually, however, the decking is removed in the daylight, leaving only the almost invisible cables. Identification of these crossing points is further hampered by emplanted vegetation along approaches and service roads in the area. The longest known cable expansion bridge extended for 720 feet across the Song Lo River at Viet Tri, North Vietnam.

The cable bridge has also been modified for railroad use by suspending cables from existing bridge piers for additional strength. Another technique is to float raft-mounted rail bridge sections down stream to give the appearance of unserviceability.

Dummy cable bridges have also been detected in North Vietnam. However, the diameter of the ropes used to simulate the cables are much thicker and the lack of concrete anchorages on both sides of the river makes them easy to identify on photography (See Figure 34).

In both fluid and static military situations, motorized vehicles are an essential element of logistics which may strongly influence, or even determine, the outcome of the particular situation. As such, they offer prime targets for tactical air attack, especially when they are found in numbers.

To prevent the detection of motorized vehicles, the Communist deception specialists have used various deception methods. In most

cases, natural vegetation is used to aid deception. Frequently, vehicles are parked at random within a native village, protected by revetments, the whole covered with a foliage shelter. Wood frame-works mounted over the cab to support camouflage have been observed on a majority of the cargo trucks in Laos and North Vietnam.

Another technique is to make one type of rolling stock appear as another (See Figure 35). This is often seen when rail tank cars are disguised as boxcars by constructing a wooden frame over the car and covering it with canvas or wood.

Camouflage disruptive painting is also widely employed. It ranges from mottled patterns to actually painting crossties and rails on the top of rail cars to give the appearance of empty tracks. However, close examination by the photo interpreter will reveal a shadow being cast by the boxcar.

Dummy/decoy locomotives have also been used to deceive strike aircraft. The dummys are probably constructed of wood or bamboo and are of fair quality. Application of a dark nonreflective paint, and the attachments of foliage or garnished netting would enhance this dummy/decoy a great deal and lend a bit more fidelity.

Urban and Industrial Facilities

Large basic industries such as powerplants and steel mills are well-known, well-targeted, and were frequently bombed. The use of deception on urban and industrial facilities has been limited primarily to smaller, less obvious installations which were not the object of of airstrikes. On at least one occasion, however, in October 1967, chemical smoke generators were detected in use. Figure 36 shows that they can create a smokescreen obscuring a large target area. In this case, the smoke was effective against a TV guided Walleye missile launched from allied aircraft.

The countless dams, locks, and irrigation pumping stations on North Vietnam's vital waterway system were not subjected to air-strikes. However, a number have shown signs of at least initial camouflage, perhaps in anticipation of possible future events. The most intense preparations have been observed at the irrigation pumping stations, even to the extent of covering the immediate portions of the canal with foliage or bamboo matting (See Figure 37). Although the matting conceals the pump house, additional components have been poorly camouflaged. More important, the selection of camouflage materials does not blend in with the existing environment.

Conclusion

As has been mentioned, Communist deception measures against aerial reconnaissance have been devised to prevent allied intelligence from obtaining accurate information or to mislead with inaccurate information. If successful, these measures could divert attack or otherwise reduce the effectiveness of allied airstrikes.

Photography has recorded the Vietnamese Communists' skillful use of deception. The importance they attach to deception is clearly evident in the number of techniques they have devised to aid them in supplying and expanding their war of insurgency in Southeast Asia. They have been somewhat successful in diverting air attacks, but in general their efforts have failed, chiefly because of the zealous efforts of the photo interpreter.

Figure 1. The automatic weapons site in this picture is camouflaged with foliage. Natural vegetation has been planted in the area to conceal revetments and track activity, resulting in a "salt and pepper" pattern that contrasts with local vegetation patterns. Inset photo shows vegetation planted on a revetment and personnel running to man the weapon.

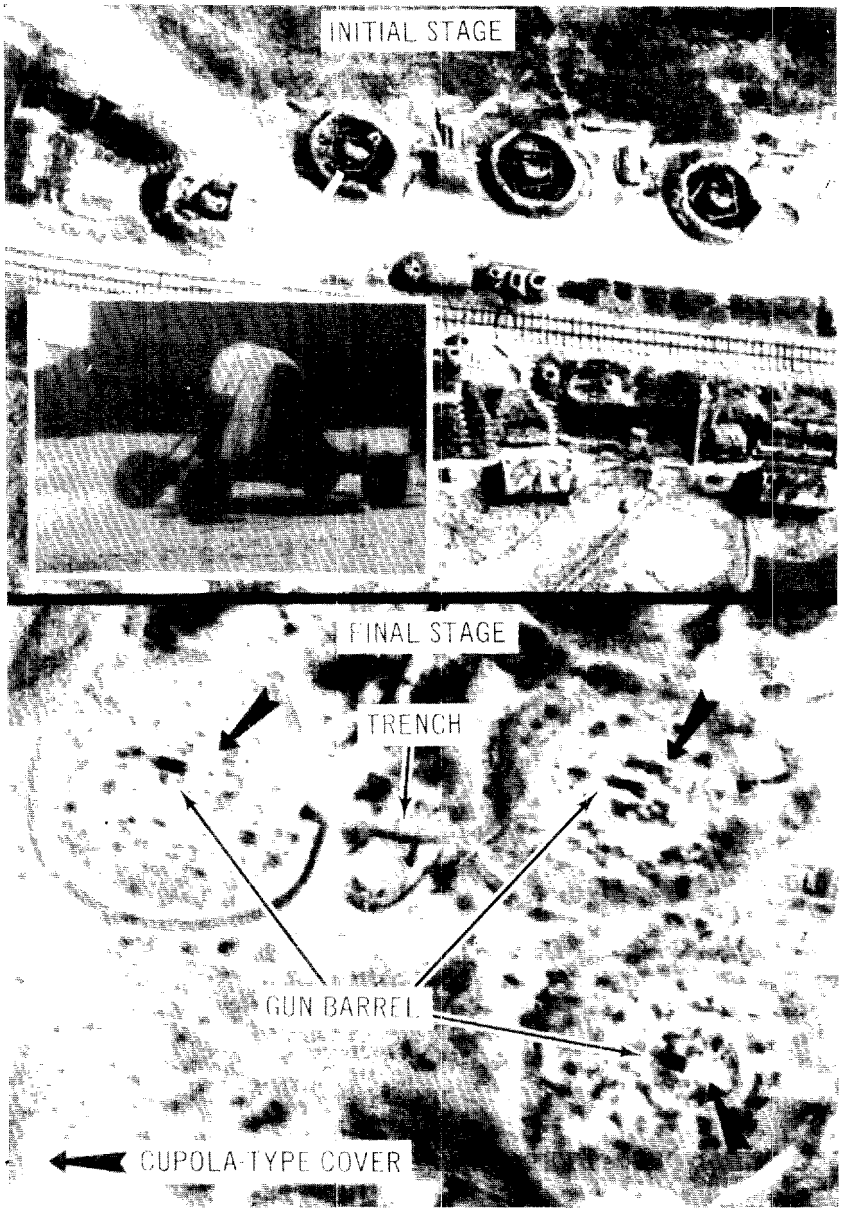

Figure 2. Top Photo shows a 37mm antiaircraft site in initial stage of construction. Completed site in bottom photo shows cupola-type cover over each revetment and vegetation planted on the cover. Cupola conceals all but the barrel of a weapon. Inset photo shows a 37mm piece in transit.

Figure 3. This dummy/decoy antiaircraft site is located near Hanoi. Note the dummy vans that are being supported by poles. Some foliage has been placed over the dummys and a vehicle has been driven around the site to add vehicle tracks for more authenticity.

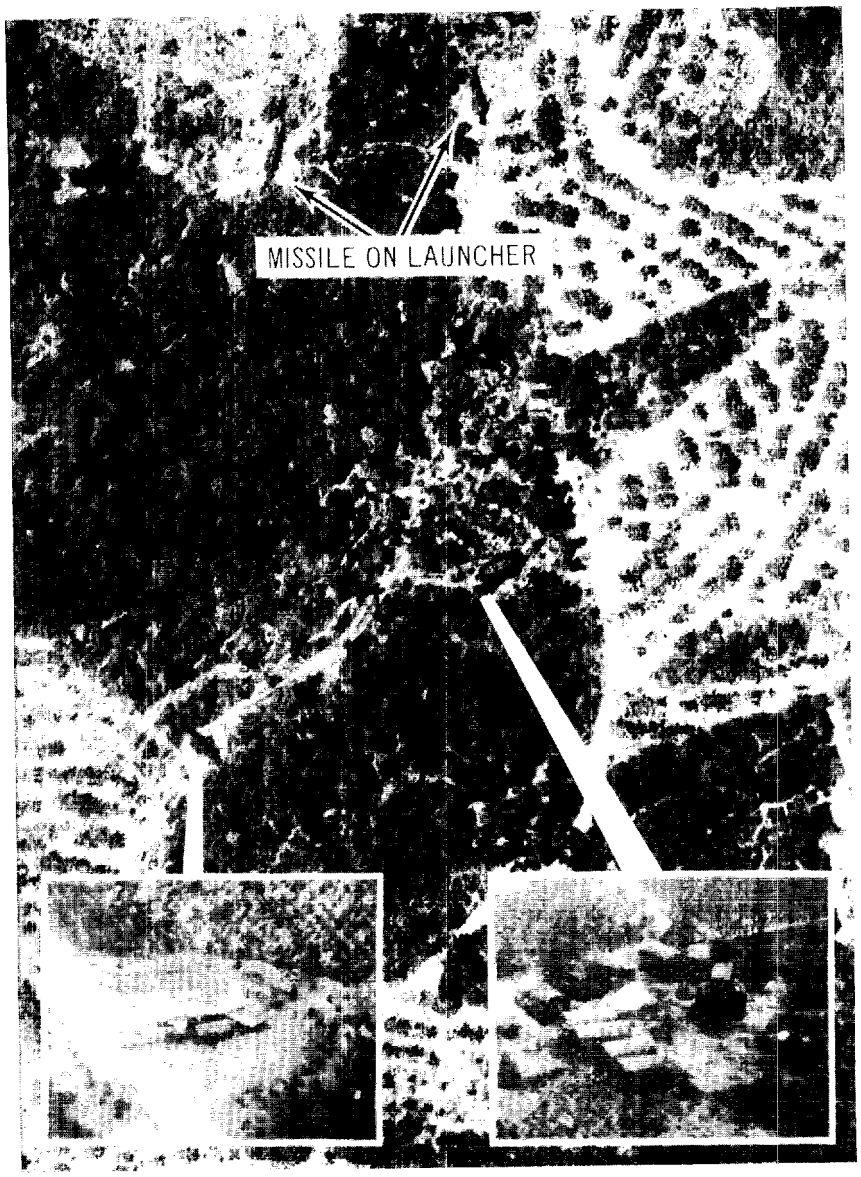

Figure 4. Alert photo interpreters identified this camouflaged field deployed surface-to-air missile site near Vinh Linh, North Vietnam in 1966. Note how the agricultural pattern has remained undisturbed. Inset photos illustrate central guidance area with radar equipment, and a missile on launcher. Can you pick out the remaining three missiles?

Figure 5. Bombed out barracks areas, such as the one in this photo, and abandoned villages have served as a temporary location for their field-deployed SA-2 missile sites. Note how the track activity has been kept to a minimum.

Figure 6. Because of the mobility of SA–2 missile equipment, the North Vietnamese have been quite successful camouflaging and concealing it during transit. Note the rear end of an SA–2 missile and transporter which is hardly visible under the tree canopy.

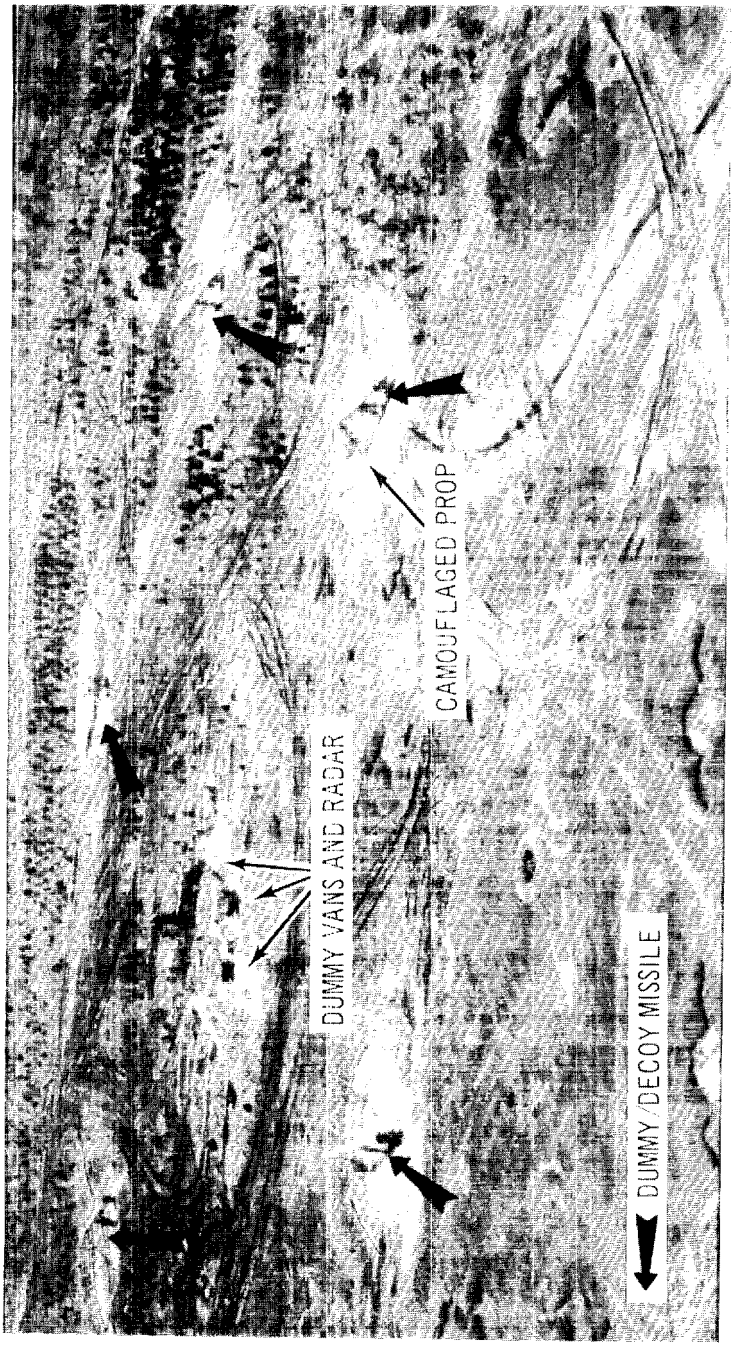

Figure 7. The photo interpreter can easily discern the dummy decoy missiles at this site because of their lack of realism. However, fast moving pilots could be fooled by the dummy decoys and diverted from bonafide targets.

Figure 8. Total lack of track activity, missile associated equipment and the fact the revetments are too small, readily identifies this as a dummy/decoy site. Can you see the damaged dummy missile?

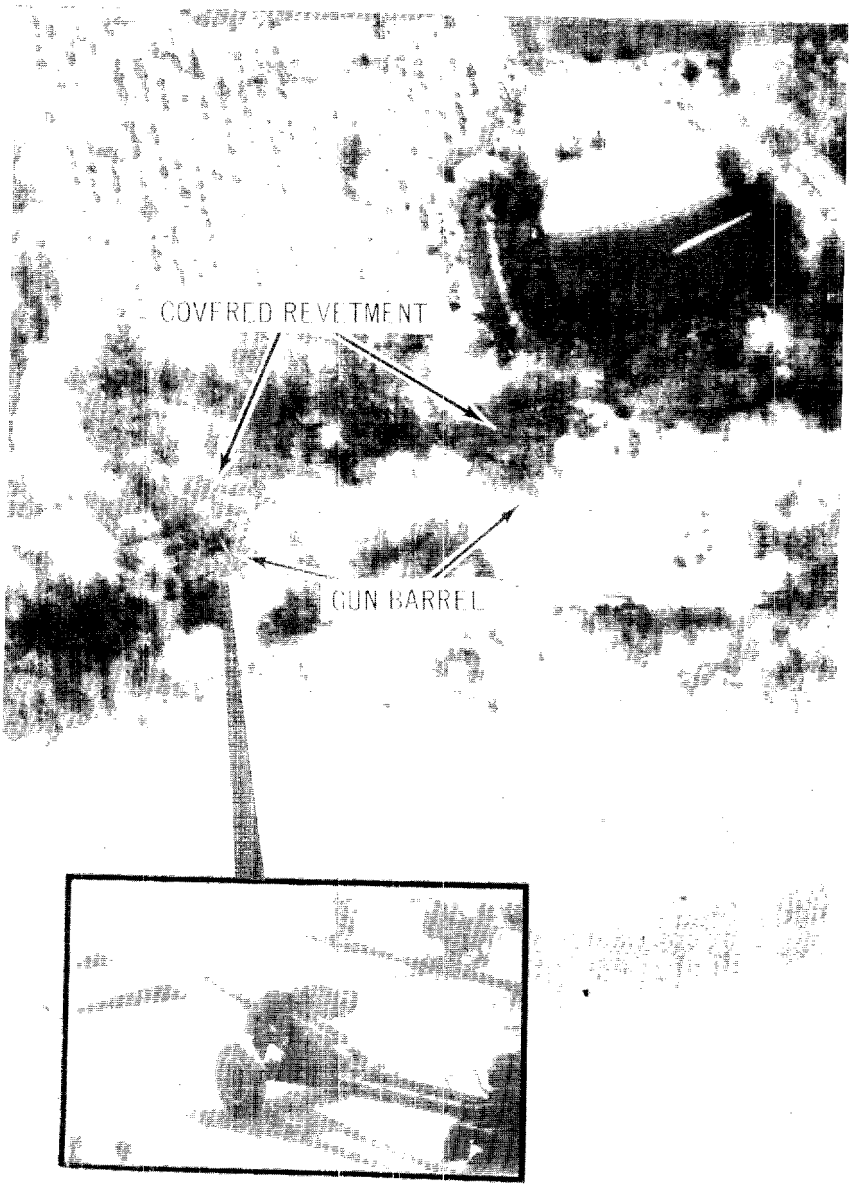

Figure 9. Only the long barrel of the probable 100mm field piece is visible at this camouflaged coastal defense site near Vinh, North Vietnam. Note how the revetment camouflage blends in with the surrounding scrub growth that predominates the general area.

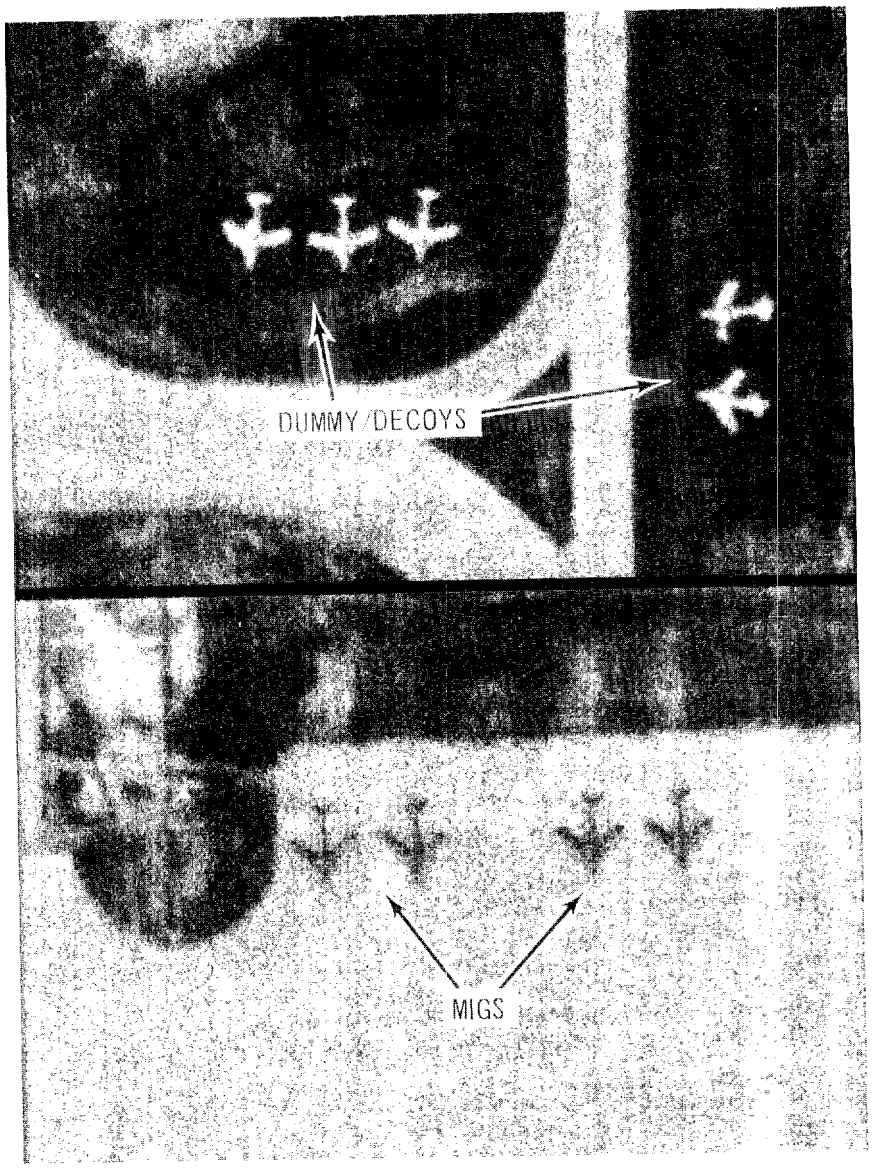

Figure 10. Upper photo reveals several dummy/decoy aircraft that were the first observed in North Vietnam. Note the uneven fuselage and inexact wing alignment. When compared with several Mig aircraft detected at the same airfield, a lack of fidelity exists (see lower photo).

Figure 11. This camouflaged Mig aircraft located approximately 1.5 nautical miles from Haiphong/Cat Bi Airfield was probably transported into the area by Hook helicopter to avoid damage or destruction.

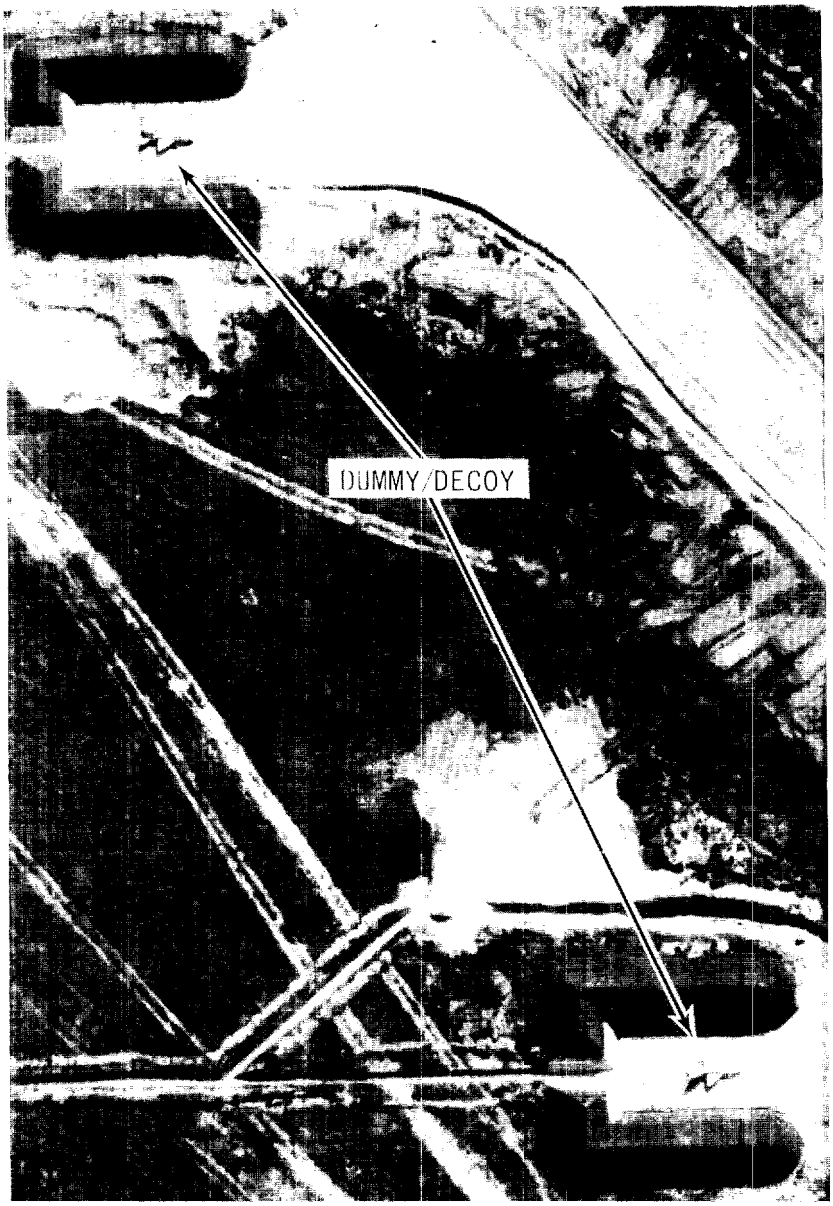

Figure 12. The dummy/decoy delta-wing aircraft observed at Hoa Lac Airfield, carry a good resemblence to Mig–21 aircraft. However, when compared to the known dimensions of the aircraft revetment, the discrepancy in size is apparent to the photo interpreter.

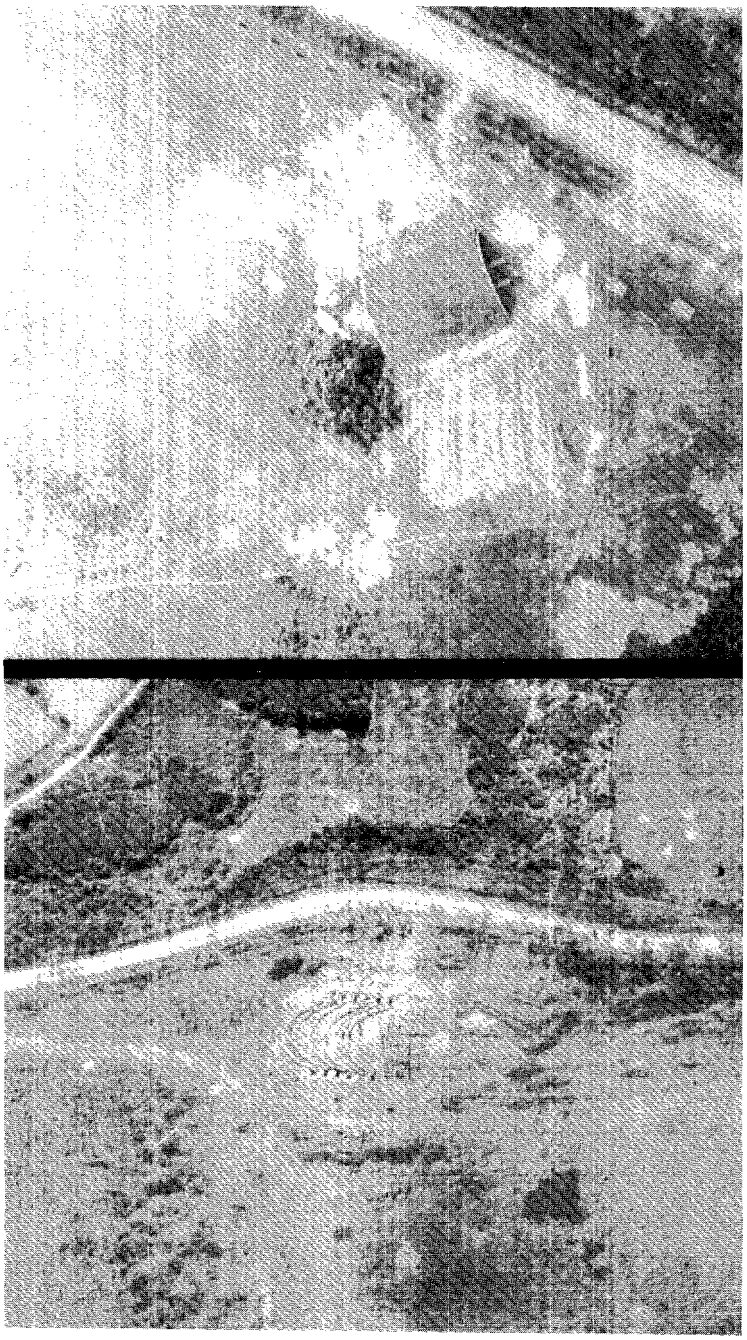

Figure 1-3. Left photo illustrates an aircraft hangarette in the early stage of construction. The right photo shows one nearing completion at the same airfield in North Vietnam.

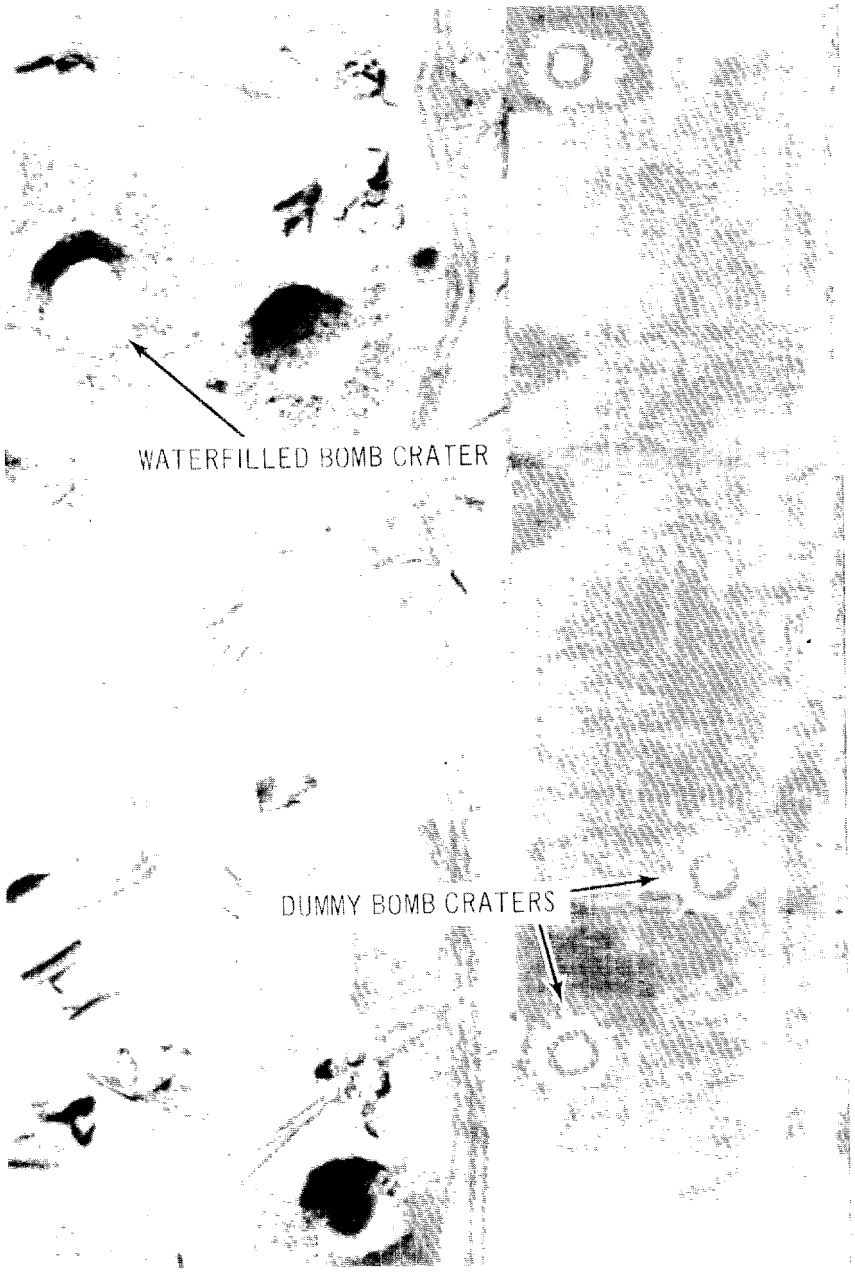

Figure 14. Lack of depth and shadow make these dummy bomb craters easy to identify.

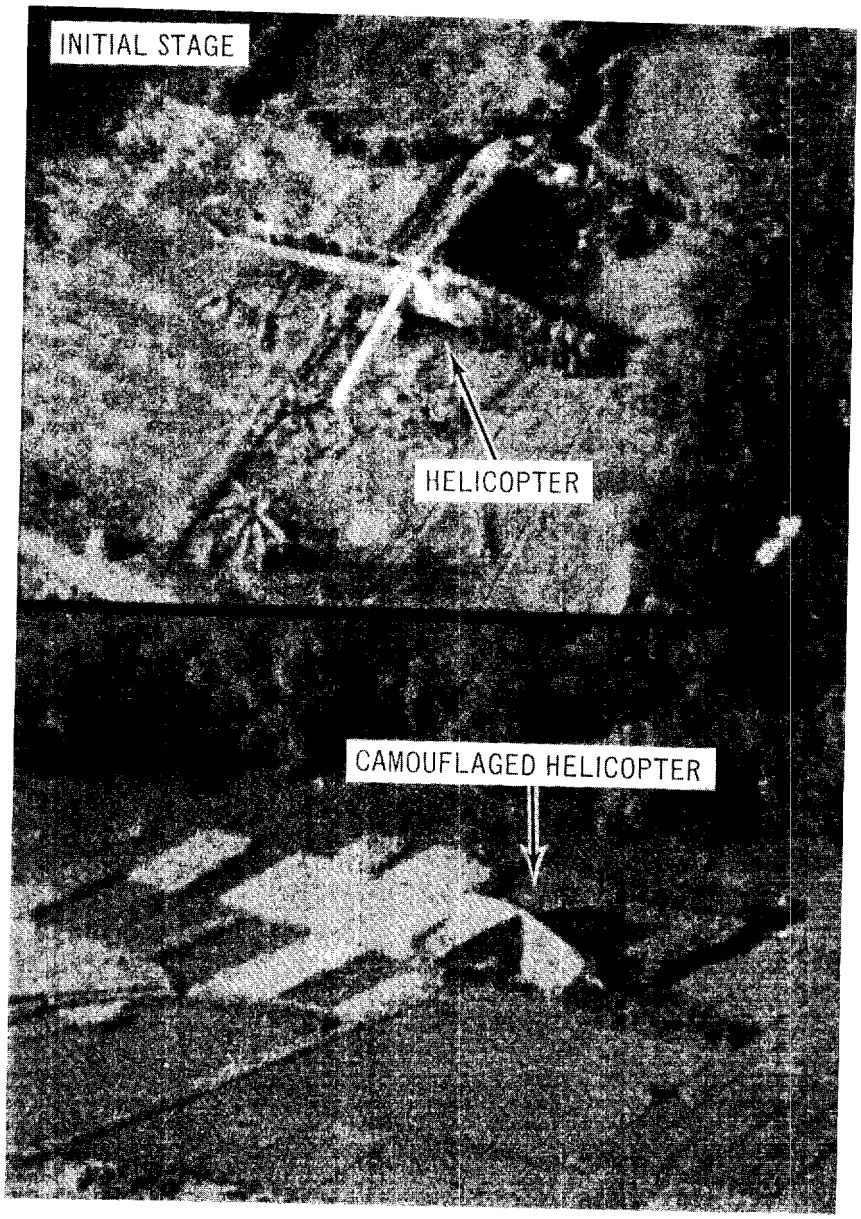

Figure 15. Prior to the cessation of bombing in North Vietnam, helicopters were frequently camouflaged and dispersed in open fields near native villages. The artful use of foliage and garnished netting makes identification difficult.

Figure 16. Although a generous application of garnished netting has helped to conceal the superstructure on this vessel, the hull silhouette of this North Vietnamese Subchaser is clearly visible moored to an offshore island in the Gulf of Tonkin.

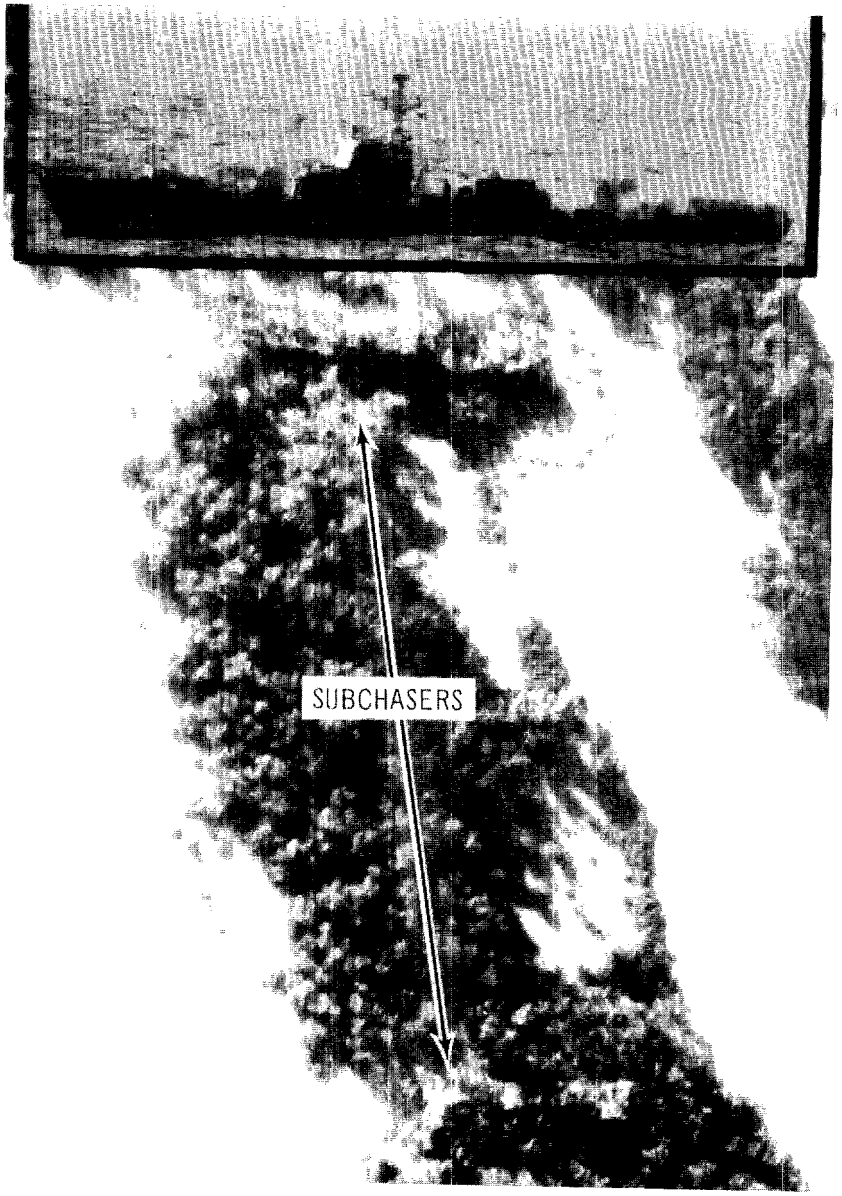

Figure 17. Another technique employed by North Vietnamese naval units is to dredge small slips into the river bank where vessels can be moored under the tree canopy. The draping of netting and foliage over the ships superstructure provides effective camouflage as illustrated in this photograph.

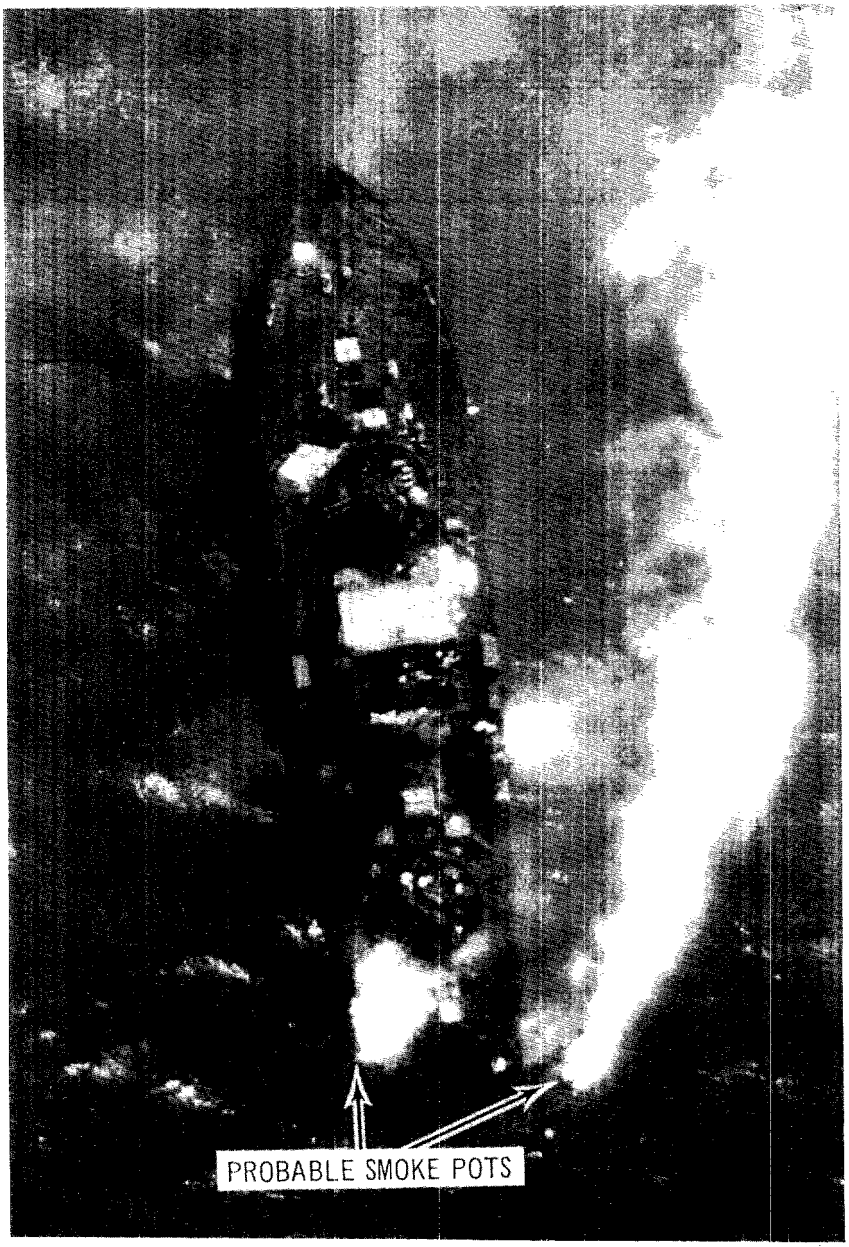

Figure 18. This North Vietnamese Swatow Gun Boat was one of several that were apparently strafed in the Gulf of Tonkin. Note the use of smoke pots presents the appearance of damage to the vessel.

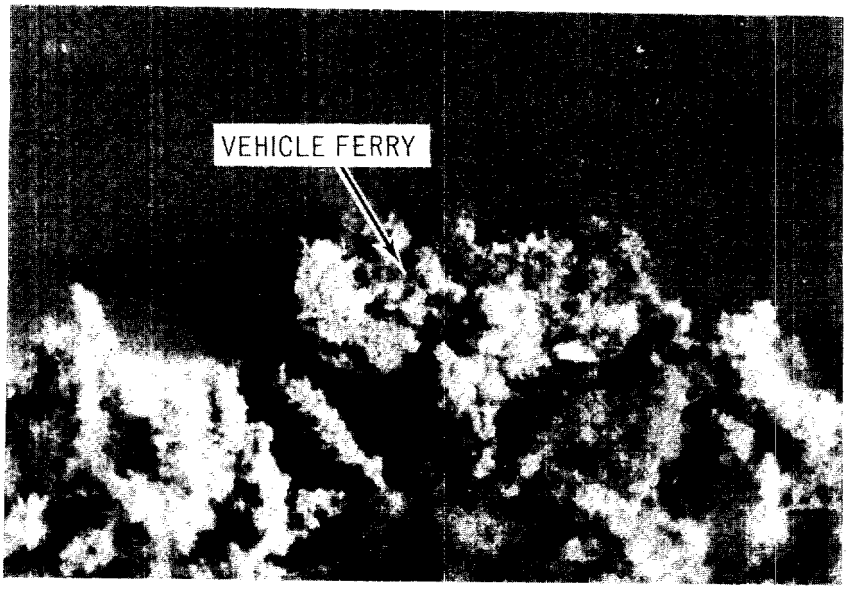

Figure 19. A vehicle ferry has been moored alongside a heavily vegetated river bank in Laos. Besides camouflaging with tree branches, the existing tree trunks are tied down to provide additional camouflage.

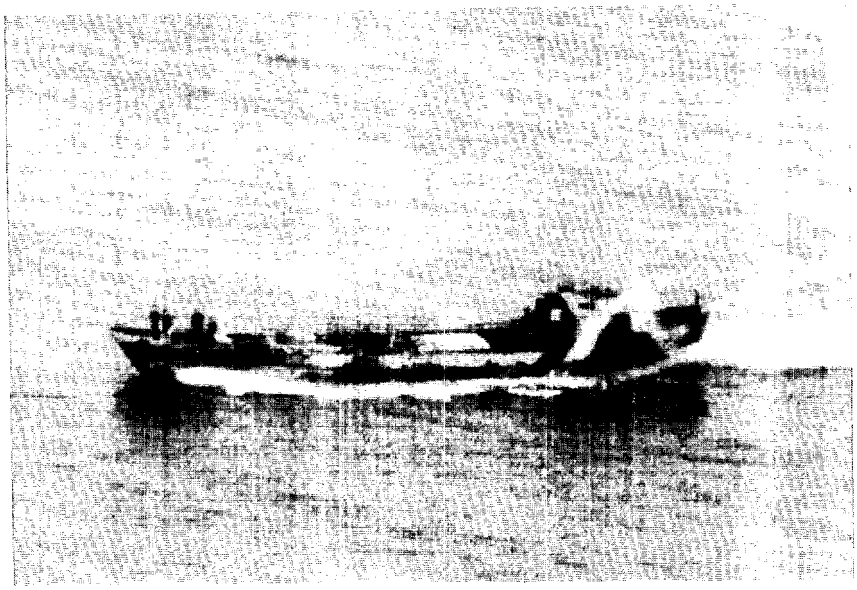

Figure 20. Some light coastal junks have been covered with camouflage disruptive paint to disrupt the hull silhouette.

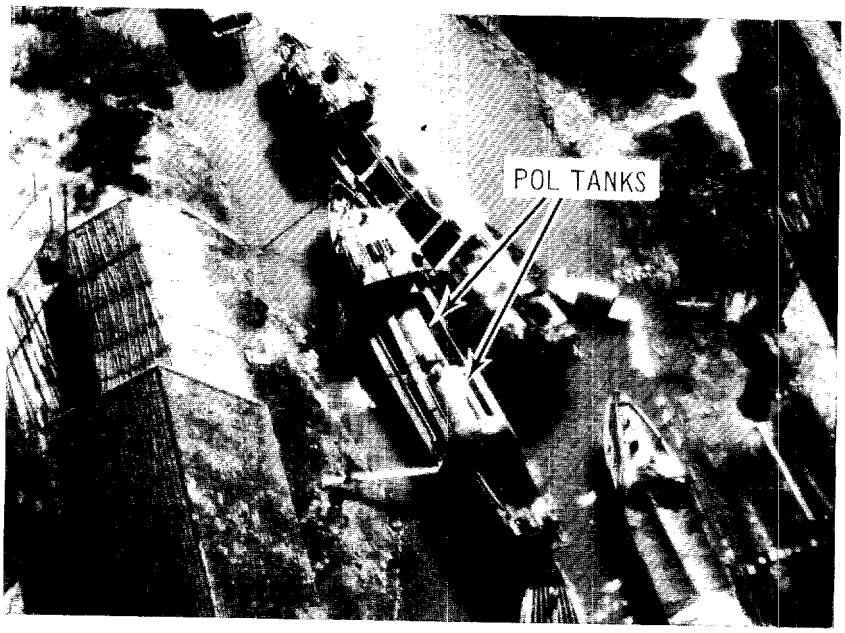

Figure 21. Several 40 ton motorized junks carrying concealed POL tanks like the ones in this photo, have been observed along numerous inland waterways in North Vietnam.

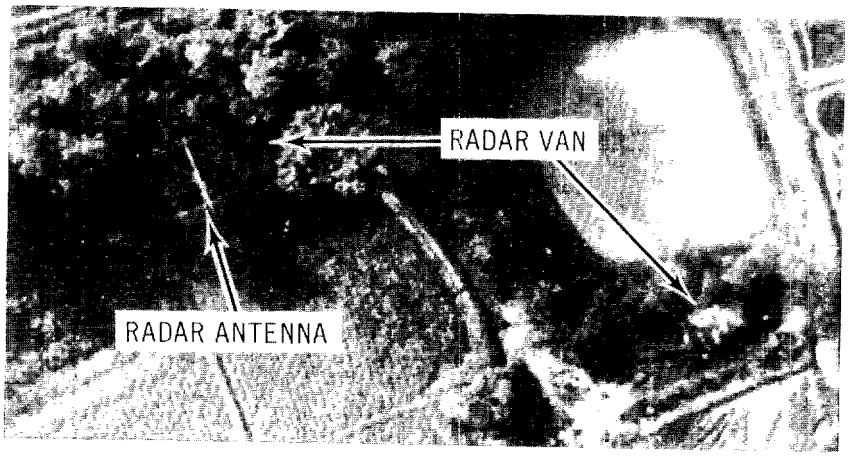

Figure 22. This aircraft warning radar van is parked in a village area. The tall trees provide dark shadows during the day that help to mask its presence. Note the electronics van is barely visable, however the yagi-type antenna can be seen extending over the tops of the adjacent trees. The photo signature that led interpreters to this site is the shadow of the radar antenna. Can you see it on the ground?

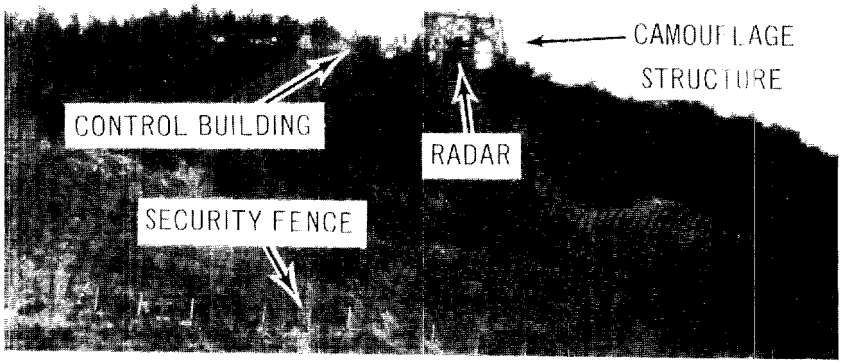

Figure 23. A low flying reconnaissance aircraft photographed this North Vietnamese surface search radar perched atop a rocky promentory. The horizontal shot of this installation with the clear sky as a background, helped to identify the antenna which is located inside an octagonal shaped wood structure. The camouflaged structure makes identification difficult from vertical photography. The unusual camera angle combined with the time of day has helped to provide information over and above that normally expected in the design characteristics of the system. This phenomenon has been labeled the "serendipity effect" by the Director, NPIC.

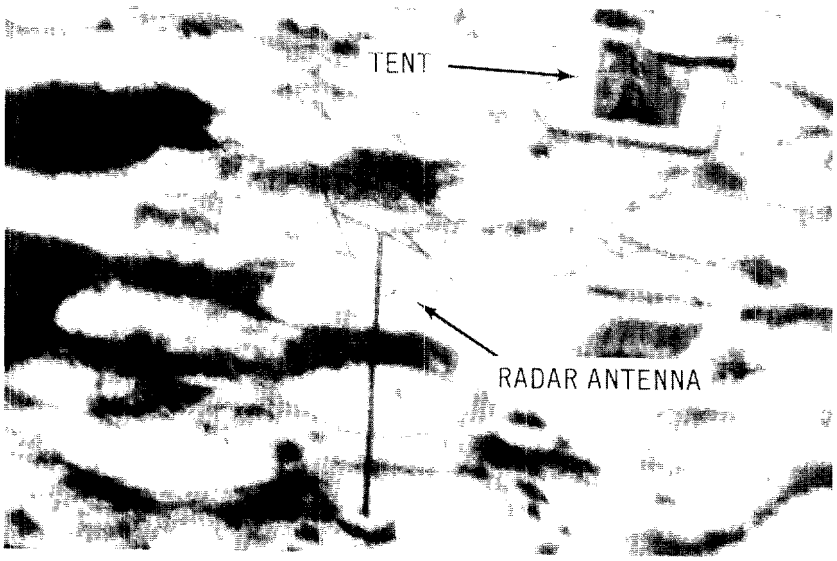

Figure 24. An open area can provide good camouflage if the radar equipment is basically simple and the tracks covered. The tent probably houses control equipment. Note how the background is undisturbed.

Figure 25. Deception discipline has been rigidly inforced at this Communist base camp in Cambodia. When viewed with the naked eye only five buildings are partially visible. However, analysis of stereoscopic photography reveals 16 additional buildings concealed by the tree canopy and camouflaged with natural vegetation. Note, the vehicle tracks are well concealed.

Figure 26. The buildings and service road in this Communist base camp located in Laos, are more visible when compared to those in Figure 24. Apparently deception discipline is not rigidly enforced.

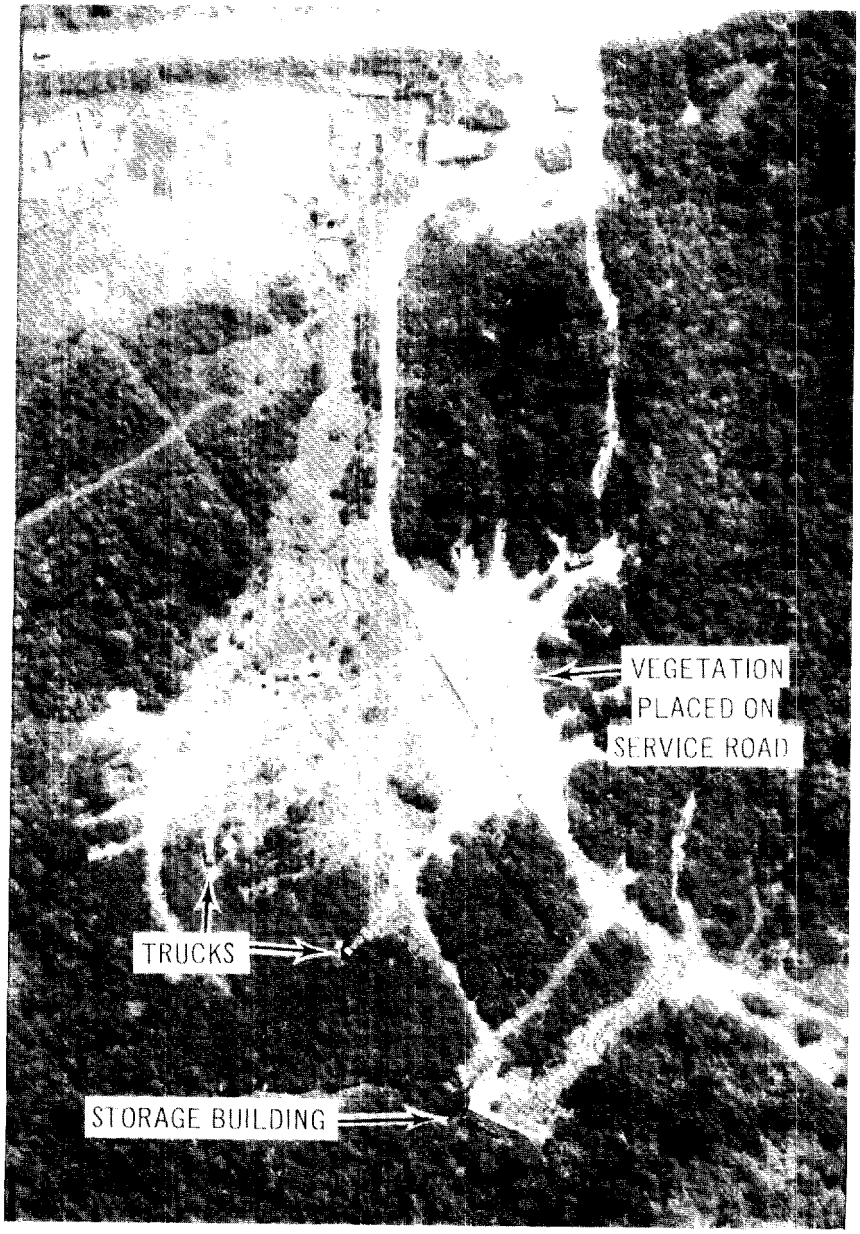

Figure 27. Vegetation emplanted on roads is supposed to present the appearance of disuse. However the heavy track activity at this facility in Laos is easy to discern because the regular spacing of emplanted vegetation has an artificial "salt and pepper effect" when viewed on overhead photography.

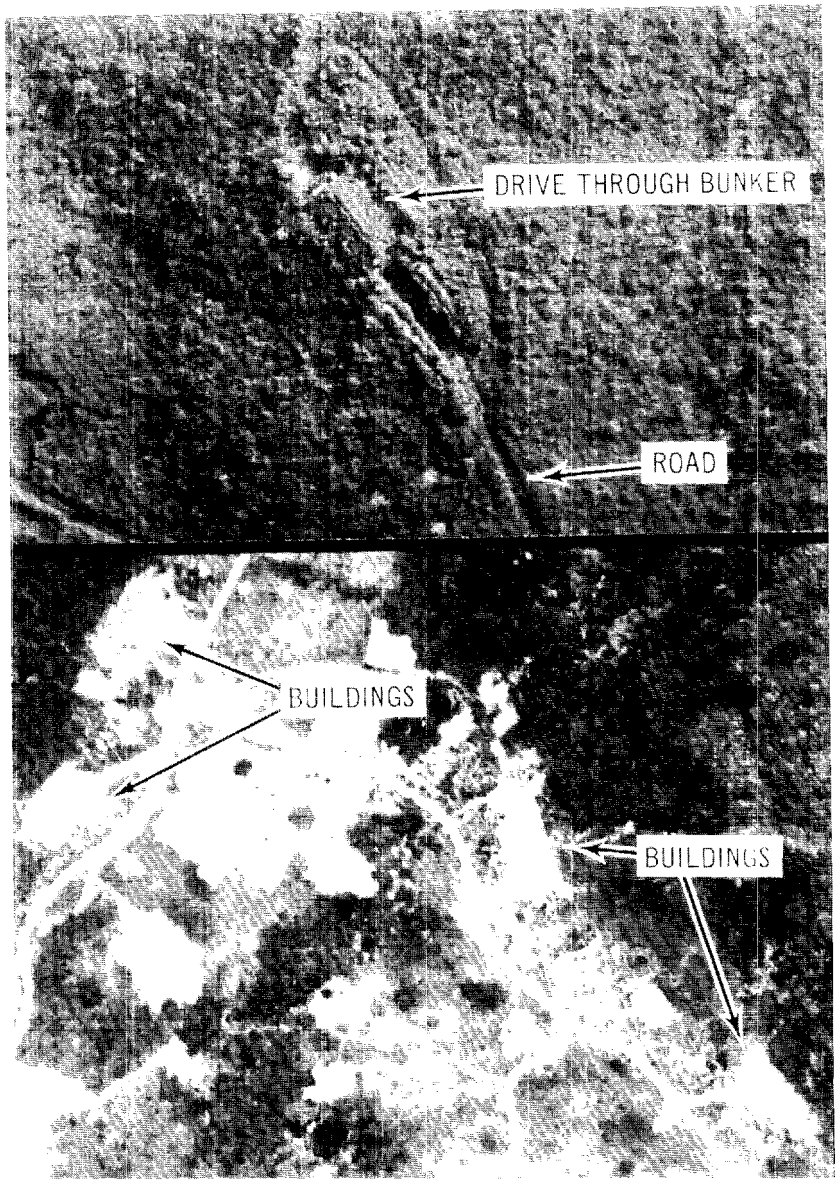

Figure 28. Upper photo illustrates how the proper application of natural foliage on access roads and military associated buildings is considered paramount. In the lower photo, camouflage disruption paint was artfully applied to the roofs on these ammo storage buildings. However, the deception specialist was remiss when he failed to conceal the access roads.

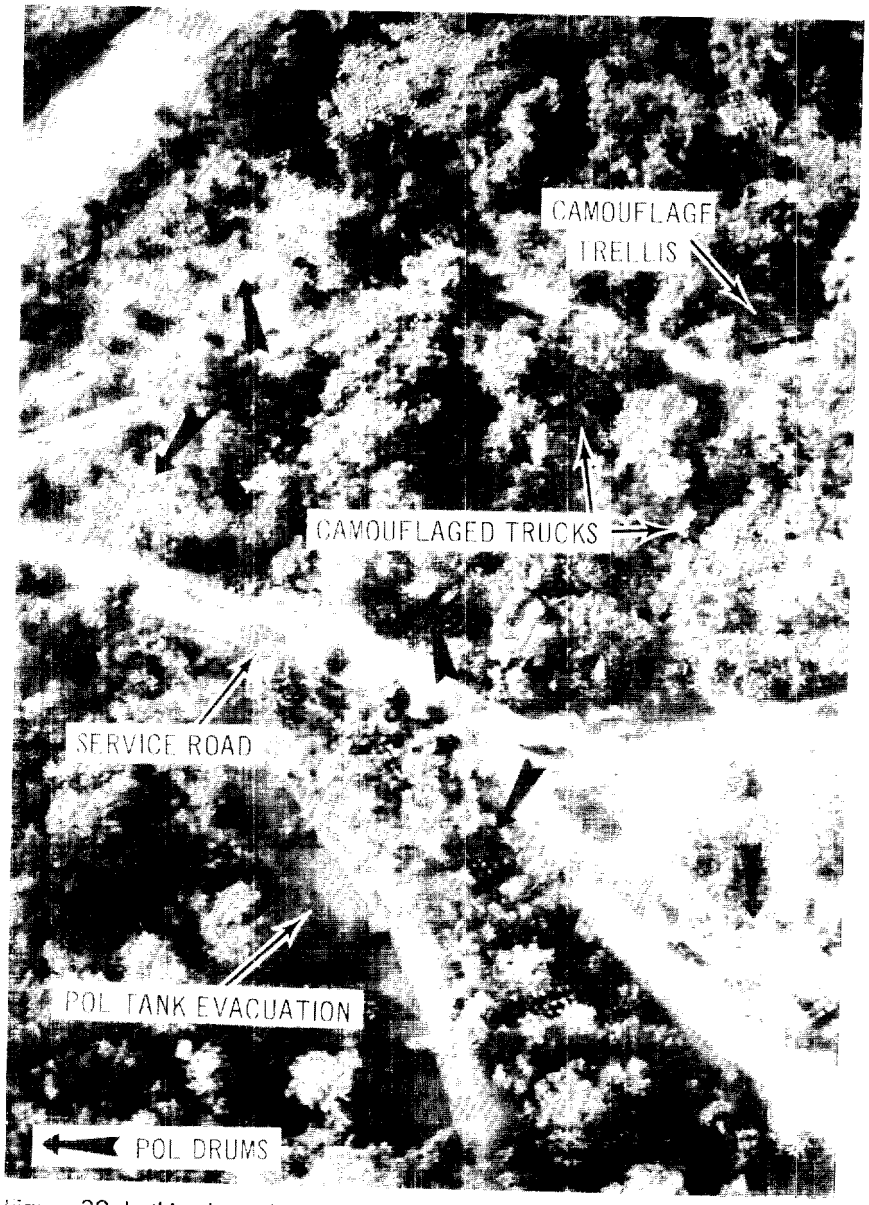

Figure 29. In this photo the track activity at a POL facility is easy to identify, but the POL supplies have been partially concealed and camouflaged with foliage and a camouflage trellis. Can you see the cargo trucks?

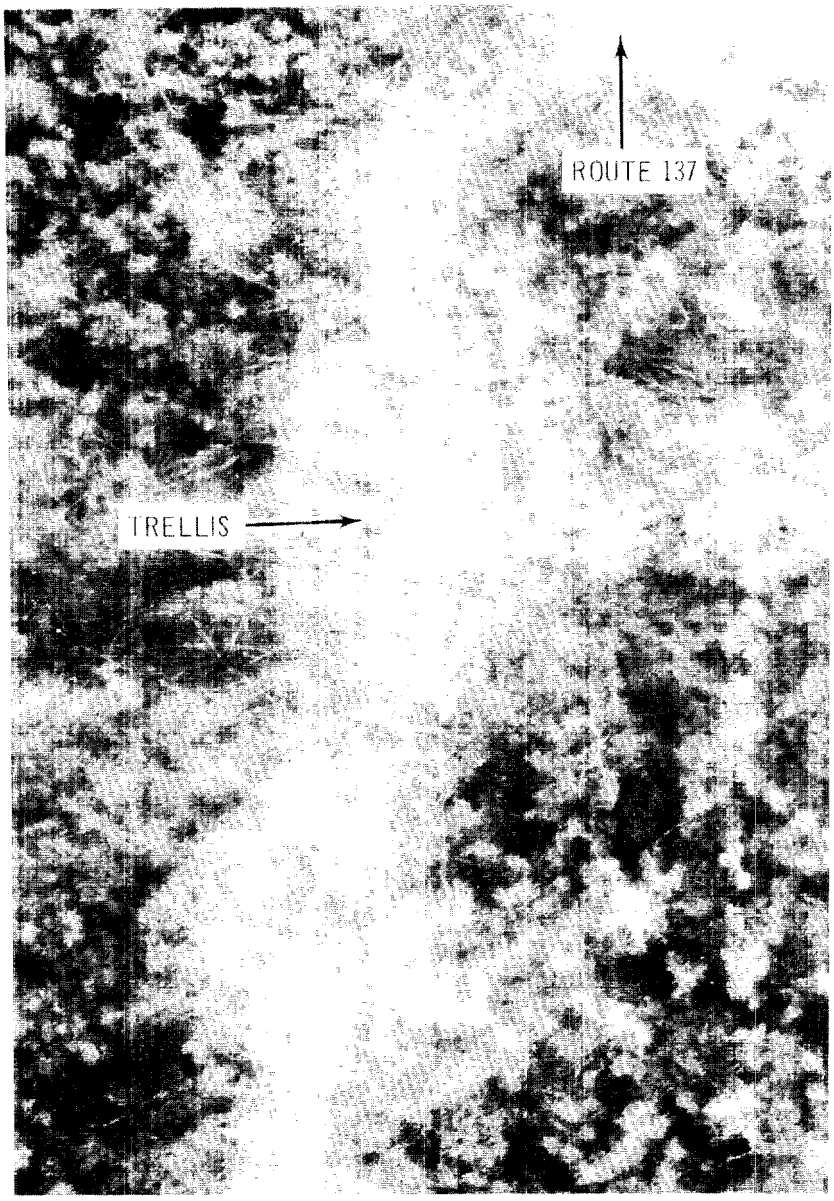

Figure 30. The arbor-type trellis observed in this photo has been used quite extensively by North Vietnamese to conceal new road construction and access roads that serve truck parks and military installations.

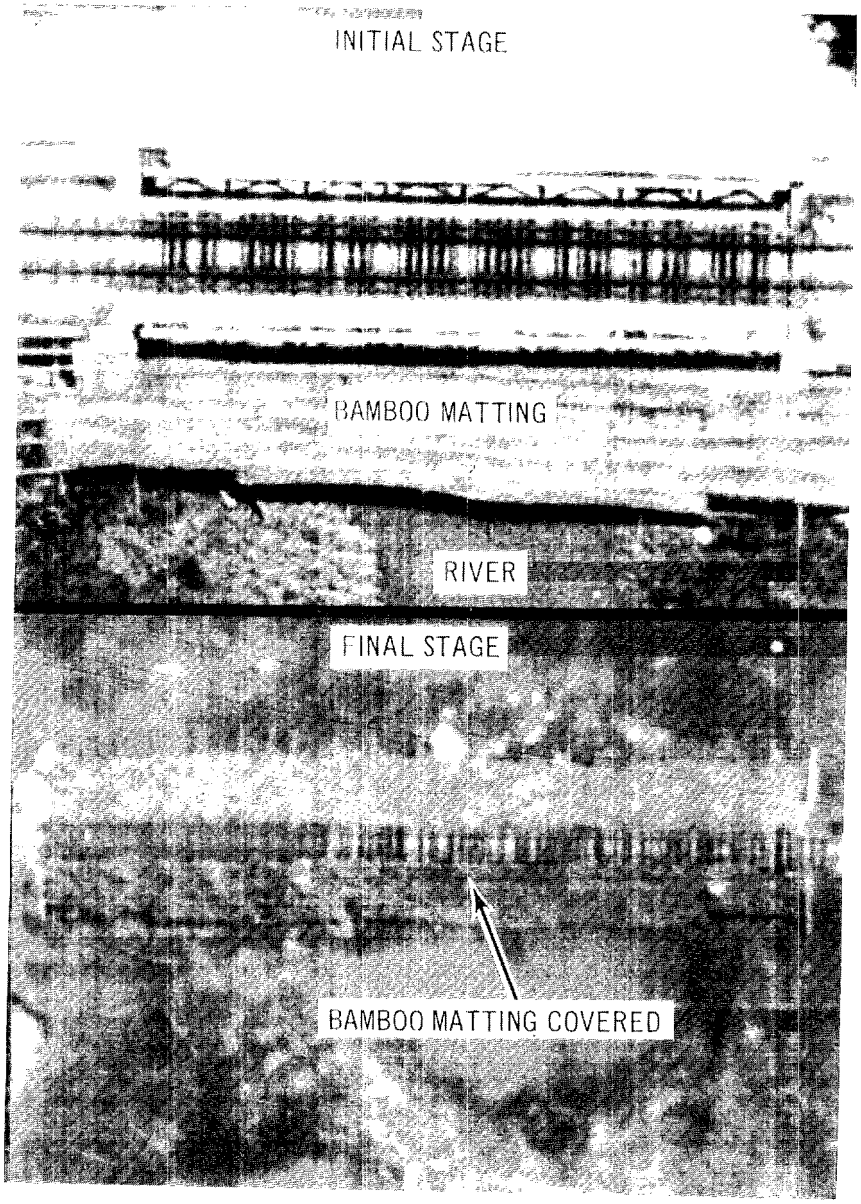

Figure 31. In the upper photo a bridge is observed in the early stage of being camouflaged. In the lower photo the bamboo matting placed on the abutments of a similar type bridge has been covered with vegetation to blend in with the adjacent road bed.

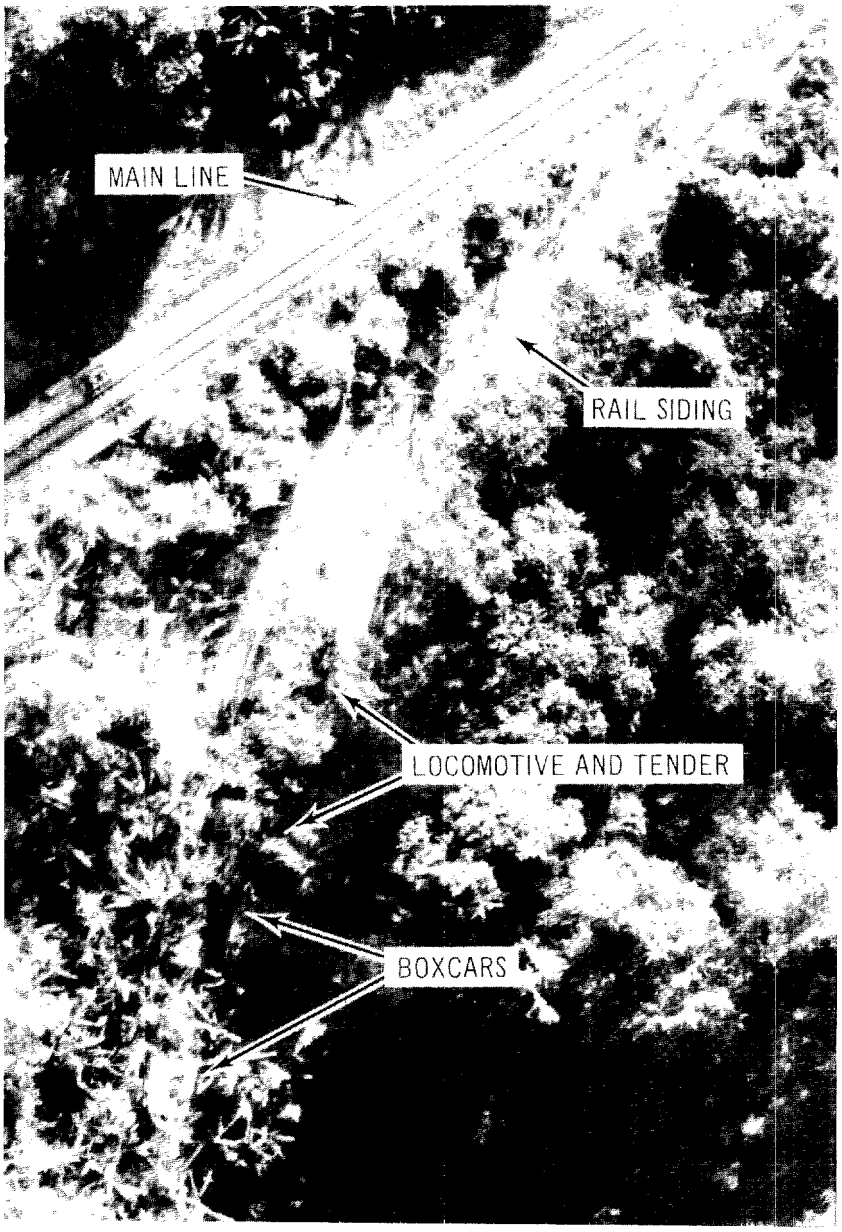

Figure 32. Emplanted vegetation, natural foliage, garnished netting, and tieing tree tops together have been used to camouflage this locomotive and boxcars located on a small rail siding.

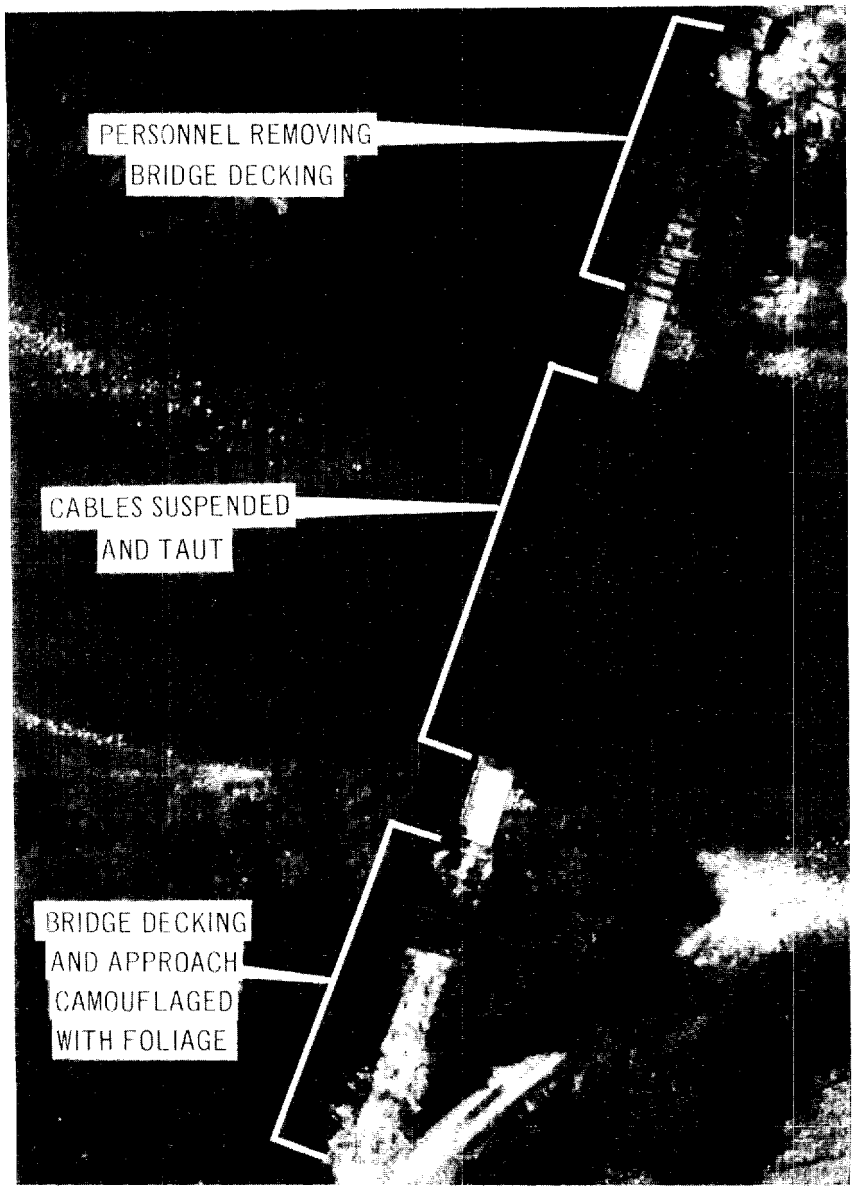

Figure 33. Close examination of this photo will reveal a fording point with adjacent cable bridge in the process of having the bridge decking removed by personnel. The cables suspended across the river are scarcely visible, giving the bridge an unserviceable appearance with the decking removed.

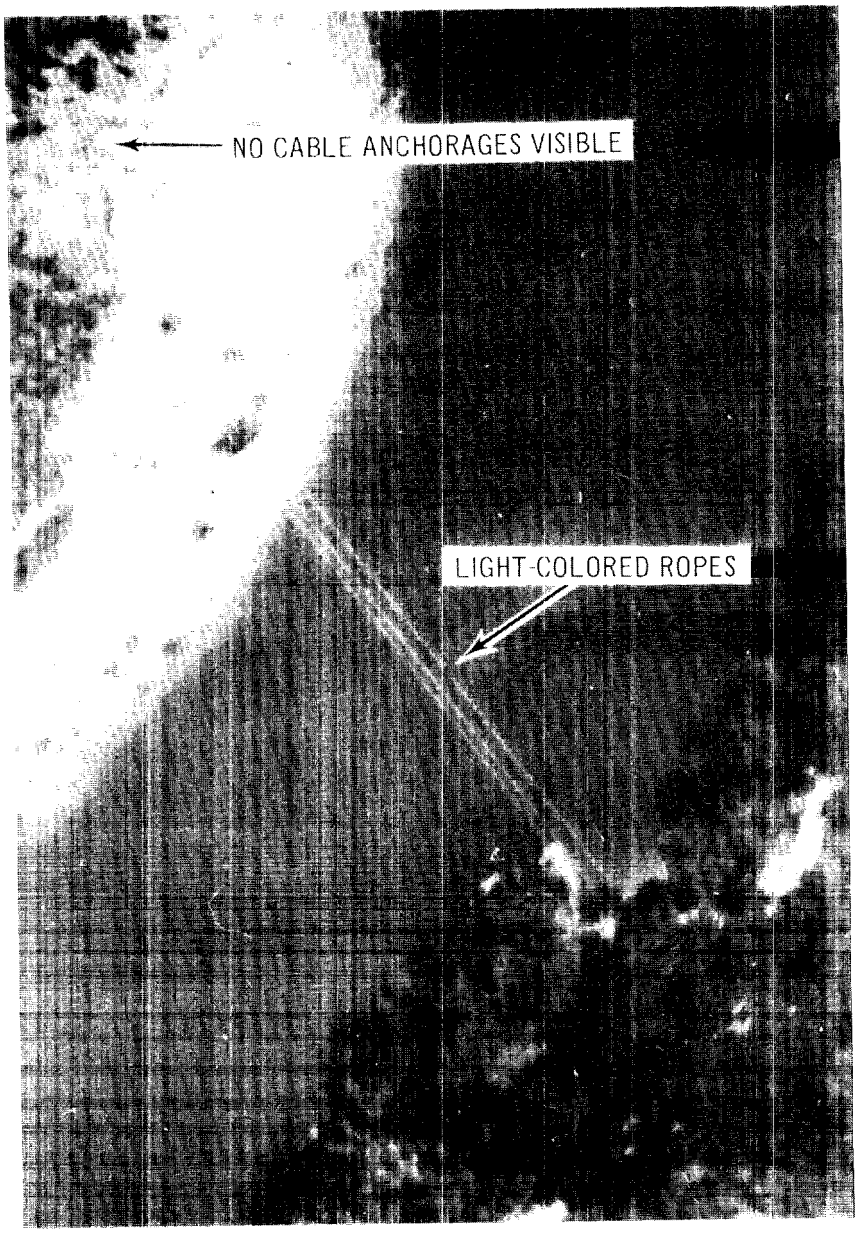

Figure 34. A dummy cable bridge is easy to identify due to the lack of cable anchorages and serviceable approach roads. Note the light colored ropes that have been strung across the river to simulate cables which is contrary to usual attempts to make cables difficult to see.

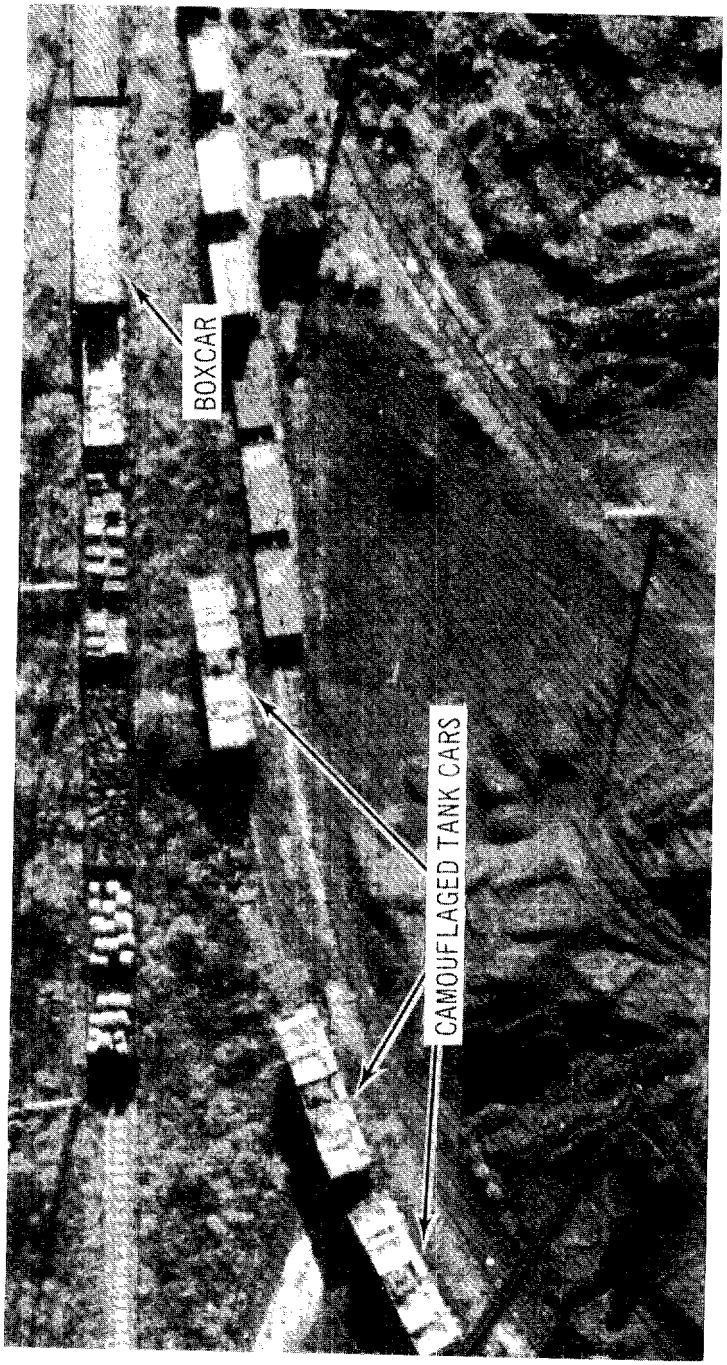

Figure 35 Because of the importance of POL supplies to their logistics activity, the North Vietnamese sought to protect transiet POL whenever possible. Even wooden structures with canvas or wood covering was used to change the appearance of rail tank cars and make them appear as boxcars.

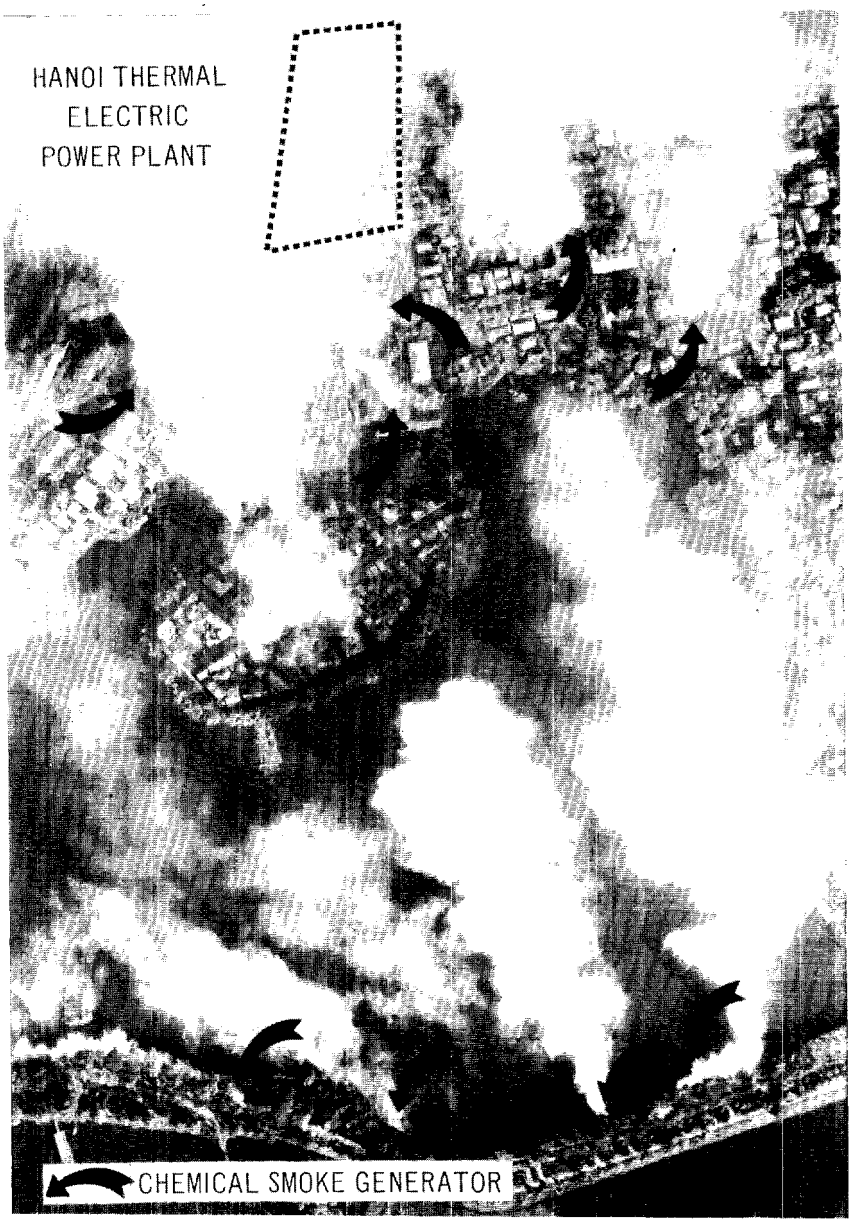

Figure 36. The North Vietnamese have deployed chemical smoke generators to create a smoke screen at important installations, probably in an attempt to foul television-equipped Walleye missiles, but also to obscure a large area against airstrikes.

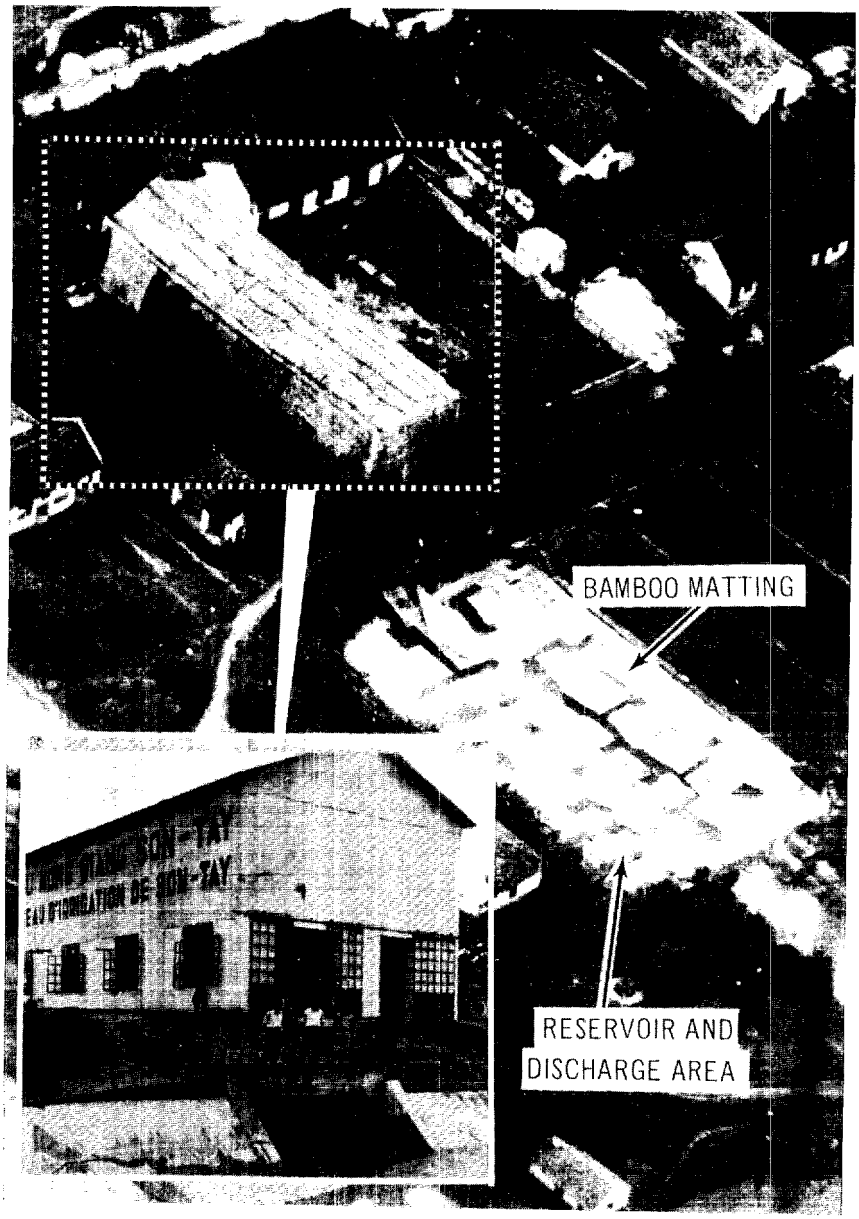

Figure 37. Irrigation pumping stations were amoung the first urban and industrial facilities to be camouflaged in North Vietnam. You will note in this photo, bamboo matting being placed over the entire pump house and the reservoir area. The inset photo of this facility was taken in 1952.

Suggestions on how to think about systems analysis

SOME LIMITATIONS IN SYSTEMS ANALYSIS IN INTELLIGENCE ACTIVITIES

R. C. Shreckengost

The procedure to be followed in using operations research or systems analysis techniques to identify optimal actions in large, complex systems is somewhat akin to the recipe for tiger soup, i.e., take one tiger. . . . If consistent and well-behaved values and objectives are at hand the analyst may then proceed to apply the art to achieve an optimal concoction. Unfortunately, the multitudinous values generally required to explore fully the optimum allocation of resources among diverse intelligence tasks and responsibilities are as critical to the process as the tiger to tiger soup—but far more difficult to bag, assuming that a suitable set of values even exists.

The extension of operations research and systems analysis (OR/SA) techniques from the initial areas of their use—business and military operations—to other types of activities has been difficult and slow. A question persists about the feasibility of orderly analysis and quantification to identify desirable decisions affecting large-scale social systems. However, the demonstrated effectiveness of these techniques in business, military, and similar areas has stimulated effort to extend the methodology to these other areas where the problems of analysis are admittedly extremely complex and difficult.

Philosophers have always been concerned with values and objectives in human affairs, so that the complexities of social and political choice are well-recognized even though few "systems" or paradigms for choosing among alternatives have evolved. In contrast, OR/SA techniques have only recently been developed and put to use, in part because a computer is required for any major analysis. It is not yet possible to describe definitively the degree and manner in which the new methods may be adapted to the analysis of age-old problems. This paper sketches some of the factors which are critical to two of the basic notions of analysis—value and optimality. The notions of value and optimality are reflected in the quantitative expressions used in analytical calculations. The large number and variety of considerations

bearing on value and optimality which must be treated in the analysis of intelligence systems will indicate some areas where better techniques and practices may be needed to facilitate the application of OR/SA techniques and enhance their acceptance.

Business and Military Applications

The chapter headings of many texts on operations research or systems analysis suggest the characteristic problems for which these techniques have been developed. Generally they are concerned with business operations such as inventory control, the movement of goods from factory to warehouse, replacement problems, queueing, and, of particular interest here, resource allocation among needs. In business operations the objectives are often relatively easy to describe—maximize profit, minimize loss, obtain a certain share of the market, etc. Further, the problem of quantification is usually relatively straightforward using dollars as units of measure. Although relatively simple compared to intelligence problems the relations of several competing objectives may be complex, and not so easy to resolve. Peter Drucker suggests eight business areas in which objectives are important: market standing, innovation, productivity, physical and financial resources, profitability, manager performance and development, worker performance and attitude, and public responsibility.[1] The relative emphasis given to any of these areas reflects executive judgments, and OR/SA techniques for coupling across these areas do not exist in any useful form. These judgments must reflect temporal factors and the external forces of the markets over which the executive may have little or no control. Further, some of these areas are difficult in terms of value quantification: the measurement of manager performance, for example, in any universally satisfactory way has yet to be achieved. So, even in some relatively straightforward areas where OR/SA has been used extensively, a more comprehensive approach is needed.

In the determination of product mix and in similar tasks where OR/SA has had substantial success, the assumptions have been generally well understood—that demand for a product may be statistical in nature and that the assumed statistics may be incorrect, or that certain assumptions with respect to linearity may not exactly describe real life—but the assumptions required to achieve mathematical tractability have not been so severe as to vitiate the usefulness of the analysis.

[1] Peter Drucker, *The Practice of Management*, New York: Harper and Brothers, 1954, p. 63.

In military operations as well as business OR/SA techniques have been employed with greater success in the analysis of problems of restricted scope. In analyzing radar operations, for example, the number of enemy aircraft detected, or similar units of value measurement, have served as readily accepted scales. In contrast, analyses of the allocation of British bomber aircraft to protect shipping rather than attack German industrial sites during World War II did not enjoy any convenient or widely accepted scale of measurement, and the decisions which were made were largely political rather than analytical.

Ordering Objectives and Values

In considering the problems of budget allocation among diverse activities, it should be appreciated that the problems of value quantification and the identification of objectives, which are basic to the determination of optimal resource allocation, are still extant in many of the activities in which OR/SA techniques have been most widely employed. In one way or another the problems to be analyzed must be modeled or structured in some orderly way—and clear objectives and the use of reasonably well-behaved values which permit a useful degree of precision in ranking alternative actions to assess optimality are basic to the development of an acceptable model or structure.

A fundamental impediment to broad acceptance of quantification and ordering of values and objectives may be the implication of right and wrong, or that an optimum decision does exist. This is slippery ground at best, and some of the ancient concerns of logic are paralleled in the problems of value and objective selection. Aristotle's famous law of contradiction, "Nothing can be both A and non-A," for example, must be accompanied by some ground rules. Many things change color with time, or have spatial distributions of color, e.g., the sky may be blue at noontime and black at night, or, if there are clouds some patches of sky may be blue and some not blue, etc. And, of course, this matter of color may depend on whether the observer is on the ground or in an airplane. Then it appears that nothing can be A and non-A at the same time, in the same place, and under the same circumstances. In a somewhat analogous fashion it might be stated that the acquisition of data for intelligence purposes has a particular value with respect to alternative allocations pertinent to some intelligence objective. But the value of acquisition in the form of an option rather than an outright purchase may be quite different, and the additional effects of place, circumstances, etc., as well as time, are readily perceived. The determination of value with respect to even a

seemingly simple item, such as a radar's frequency, may be considerably more complex than what is normally encountered in classical OR/SA problems, such as inventory.

Problems in Combining Priorities

The concept of rationality imposes another specific problem in arriving at values. In OR/SA problems rationality is frequently explained in terms of decision-maker's preferences: if A is preferred to B, and B is preferred to C, then the decision maker is said to be rational if A is preferred to C.[2] This creates no problem in classical OR/SA applications, but may be a barrier when a consensus or majority of opinion is used to rank preferences or values. For example, suppose Individual I prefers A to B and B to C, Individual II prefers B to C and C to A, and Individual III prefers C to A and A to B. A majority prefers A to B and B to C, but a majority also prefers C to A. Although the individual decision makers may be rational, their collective preferences may not be. Starting with this well-known paradox of voting it may be shown that it is generally impossible to construct a social welfare function indicating preferences for alternatives when more than two alternatives and more than one person are involved except through imposition or a dictatorial process.[3]

The development of values and the structuring of problems for analysis of collection effectiveness are more complicated undertakings than those in areas in which OR/SA techniques have been developed. Means are lacking for obtaining an ordering of values by combining individual orderings. These considerations detract from the acceptability and credibility of using OR/SA techniques in this area.

Perils in Problem Partitioning

Important problems on a still broader scale than value assignment and ordering also exist. One often tacit but important premise is that the optimal solutions to sub-problems comprise an optimal solution to a total problem. OR/SA problems of great scope are frequently divided into parts that are of more convenient proportions for analysis. The results of these several sub-analyses may not add up to an overall optimal solution - neglecting that the selection of objectives, hence a determination of optimality, may be difficult or impossible because of the possible non-rational situation described for values.

[2] David W. Miller and Martin K. Starr, *Executive Decisions and Operations Research*, Englewood Cliffs: Prentice-Hall, Inc., 1960.

[3] Kenneth J. Arrow, "A Difficulty in the Concept of Social Welfare," *The Journal of Political Economy*, Vol. LVIII, No. 4. (August, 1950).

Efforts by individual players to score as often as possible do not add up to the optimal strategy for a basketball team. Although the sport team represents a rather trite example, the equivalent may be recognized in large scale social systems. Jay Forrester's urban studies indicate that large social systems may be counter-intuitive, and that piecemeal programs intended to ameliorate some selected urban problems may in fact do more harm than good.[4] A renowned authority in OR/SA, C. West Churchman in discussing this partitioning of problems and the resulting suboptimization states:

> . . . it is clear that no person or group of persons- scientist, politicians, or whatever--can honestly say that he understands enough to guarantee by his decisions and recommendations an improvement of even a small sector of society. We are all suboptimizers, perhaps prone to the most dangerous kinds of suboptimization.[5]

Churchman further develops the need for a comprehensive understanding of a system in order to satisfactorily determine how the problems can be partitioned, analyzed, and reassembled. After noting that Plato, Spinoza, and others since have seemed to believe it possible to expand the use of models—and that this philosophy is often used today to sell systems science and operations research—so that ultimately nothing might escape the eventual embrace of rational models, he strongly states, "The trouble with this philosophy is that it is wrong, dangerously wrong, pigheadedly wrong, philosophically inexcusable."[6] The paradox lies in his belief that the end product—the complete model—is needed in order to obtain the information with which to build the model.

Other Concerns

Although the problems are formidable and the prospects for achieving a fully satisfactory procedure now appear nil, the importance of improving decisionmaking is so great that extensive effort to this end is justified. In terms of values and objectives particular attention might be given to certain characteristics which are of special concern when OR/SA techniques are employed in analyses of intelligence activities. The matter of overall benefit is perhaps most difficult because it is so pervasive and appears in so many difficult forms. An example such as the acquisition of a new reconnaissance system may suggest many legitimate benefit concerns. How will the acquisition be made? What segment of the intelligence community will benefit from the acquisition? Will the procurement hinder or help other efforts? Will the interests of the intelligence community members be equally

[4] Jay Forrester, *Urban Dynamics*. Cambridge: The MIT Press, 1969.

[5] C. West Churchman, *Challenge to Reason*, New York: McGraw Hill Co., p. 16.

[6] *Ibid*, p. 160.

affected? Any procedure which purports to embrace and rationalize diverse and somewhat independent interests must at least provide visibility of all important facets—or risk rejection. Welfare economics, ethics, and other formal approaches hold little promise for any technique for integrating individual values—this has been the subject of debate for centuries. Can these interests and views be satisfactorily treated without resorting to an integrated form? May not a system of costs and benefits be devised which more completely and honestly reflects various points of view?

The benefit analysis characteristics, difficult as they are, must also include temporal effects. To what degree should the present (or future) be sacrificed in order to provide greater benefits in the future (or present)? In view of Jay Forrester's finding that large systems may be counter-intuitive, any technique which does not provide for a look at the future is less than adequate. Although technological forecasting in neatly organized scientific and technical fields is difficult and uncertain, sociological and political forecasting is far more difficult and uncertain. Coupling temporal considerations seriously exacerbates value assessment.

A second factor typifying characteristics which should be considered in assessing values and optimality is the degree of reversibility associated with any action. An increasing public awareness of the unforeseen consequences of some irreversible act attests to the importance of this characteristic in determining values and preferences. Ultimately such concerns emphasize maintaining the *status quo*.

Possible Approaches for Improvement

Several approaches illustrate lines along which some improvements might be made in working toward values, objectives, and optimality. For example, a listing of what is, or is not, implied in any set of preferences or values would at least suggest the bounds within which an OR/SA analysis has been conducted. Knowing if the problem of radar data acquisition has been analyzed using the values of an analyst at the national level—or the values of a technical expert in radar characteristics—or the values of a tactical operations officer—provides insight to the results of the analysis. In some cases it might be useful to restrict the scope of the analysis severely, speculate on the value perturbations that might result from a set of different political conditions and their relation to optimality. Some appreciation of the sensitivity of the analysis or the OR/SA approach to political state particulars might be surfaced.

Some reconciliation of different value preferences might be achieved through the use of the Delphi technique.

Deriving implied values from current resource allocations appears to be especially intriguing. For example, appropriations for the intelligence community imply some current preferences, values, and objectives as well as past investments and commitments. The dollar amounts might be regarded as representing *de facto* values. Can a form for analysis be constructed on these values "from the bottom up" which would provide clearer visibility and, at the same time, be suitable for more refined examination and analysis using OR/SA techniques?

The frustration and concern which is so evident in C. West Churchman's views quoted earlier is also shared, however, in his view that, "It is a mistake to use man's failure to develop an adequate measure of utility of the social structure as evidence that such attempts are futile." [7]

[7] *Ibid*, p. 60.

Ackoff, Russell L., Shiv K. Gupta, and J. Sayer Minas. *Scientific Method: Optomizing Applied Research Decisions*. New York: John Wiley Inc., 1962. 464 pp.

The last chapter, the Ideals of Science and Society: An Epilogue, deals with the problems inherent in extending analysis techniques to large-scale social and political problems. Objectives and ideals in terms of operations research techniques are treated and their implications recognized. Concern for the unwarranted influence of pseudo-science is expressed since, for example, on pg. 442, "Such developments as operations research, management science, and systems analysis and engineering have brought science into the domain of important social and economic problem solving. Those who use these services are not always aware of the limitations of current technology."

Arrow, Kenneth J. "A Difficulty in the Concept of Social Welfare." *Journal of Political Economy*. Vol. 58, No. 4 (August 1950). pp. 328–346.

It is demonstrated that, given certain natural conditions, there can exist no method of deriving social choices by aggregating individual preferences. This finding is fundamental in limiting the meaning of optimality and the usefulness of objectives in the analysis of highly complex systems. For example, in the sense that individual choices can not be aggregated the concept of the greatest good for the greatest number is a logical impossibility.

Churchman, C. West. *Challenge to Reason*. New York: McGraw-Hill Book Co., 1968. 223 pp.

Directed to the proposition that the understanding, or analysis, of a part of a system is dependent upon having an understanding of the total system, severe criticism is developed regarding some simplifications which are not uncommon in formulating and "solving" OR/SA problems. Recommendations for more ethical and better practices are found throughout.

——— and A. G. Schainblatt. "PPB: How Can It Be Implemented?" *Public Administration Review*. Vol. 29 No. 2 (March/April 1969). pp. 178–189.

A systems approach to the problem of state resource allocation among the facets of a particular problem, alcoholism, is used to illustrate the potential as well as the limitations and shortcomings of the approach.

Easton, David, *Systems Analysis of Political Life.* New York: Wiley and Sons, 1965. 507 pp.

Easton's third book in a long range program to develop a general theory in political science presents a generalized model in systems analysis terms and abundant detail on the subtle coupling of many practical factors which must be considered in any analysis. (See Forrester for a companion reading.)

Forrester, Jay W. *Urban Dynamics.* Cambridge: The MIT Press, 1969. 285 pp.

A description of large scale simulation and modeling applied to urban problems employing about 20 equations to relate significant urban parameters indicating population distribution, industry, etc. Forrester estimates something like 100 equations would be required to provide a sufficiently representative simulation of a large-scale social system at the national level which could be useful for the examination of alternatives for political leaders. (See Easton for a companion reading.)

Hadley, G. *Probability and Statistical Decision Theory.* San Francisco: Holden-Day, Inc., 1967. 580 pp.

The second chapter is devoted to the Theory of Utility and discusses the notion of rational behavior in some detail.

Miller, David W. and Martin K. Starr. *Executive Decisions and Operations Research.* Englewood Cliffs: Prentice-Hall, Inc., 1960. 446 pp.

A realistic treatment of the problems inherent in establishing values and objectives, and determining optimality when working with sub-parts of a total system. In Chapters 2 and 3 there are sections on Social Scientists and Decisions, Goals, Purposes, and Rational Behavior; Conflict Between Goals; Bounded Rationality; Multiple Objectives, etc., and there are further sections throughout the book which deal with value-objective problems, and their effect on the acceptability of the solutions obtained to OR/SA problems.

National Academy of Sciences. *Technology: Processes of Assessment and Choice.* A report to the Committee on Science and Astronautics, U.S. House of Representatives. Washington: Government Printing Office, 1969. 163 pp.

A review of existing procedures of assessment, the development of the numerous problems entailed, and a description of the multiple objectives that such a process should accommodate leads to a recommendation. It is recognized that procedures might be developed which could be used as a basis for resource allocations in the public sector, including, but not limited to allocations for research and development. However, no hope is given for the development of an algebra which could lead to a net index of social desirability, and there is some fear that abuses might arise in the assessment process similar to those in which systems analysis on occasion has been used to provide a misleading mantle of objectivity for essentially predetermined value preferences.

Schlesinger, James R. *Planning-Programming-Budgeting: Uses and Abuses of Analysis.* A memo prepared at the request of the Sub-Committee on National Security and International Operations of the Committee on Government Operations, U.S. Senate, 90th Cong. 2nd Sess. Washington: Government Printing Office, 1968.

Tucker, Samuel A., ed. *A Modern Design For Defense Decision.* Washington: Industrial College of the Armed Forces, 1966. 259 pp.

A wide-ranging McNamara-Hitch-Enthoven anthology on the employment of operations research, systems analysis, and the introduction and growth of the PPBS in the Department of Defense. The very serious problems in applying these techniques in large systems under time-dependent conditions are abundantly illustrated.

Operations research in the service of intelligence

NEW PERSPECTIVES IN ELINT

R. C. Schreckengost

Determination of the best allocation of the available collection resources against the potential information sources is a basic intelligence problem. If only one collector is available and only one source, or target, exists, the solution to the assignment problem is obvious—but assignment determination rapidly becomes very laborious if even a small number of collectors must be assigned against a few targets. For example, four collectors can be assigned against four targets in 24 different ways, six collectors against six targets in 720 ways, and ten collectors against ten targets in 3,228,800 ways. Additional labor is introduced if the collectors' capabilities differ, and if the value of the information which may be obtained from the targets is not uniform.

In its broadest terms—the allocation of scarce resources to needs—the basic problem ranges from personal budgeting to national budgeting, and through private as well as public activities. Understandably, powerful operations research tools have been developed, and these can often be adapted to any particular situation. Electronic intelligence (ELINT) collection is well-suited to the application of these techniques to evaluate the effectiveness of current collection assignments against a theoretically ideal goal, to determine the over-all impact of losing or terminating some collection sites, or evaluating the improvement which might be achieved if new assets were added—or determining where they might best be added.

This paper describes some of the illustrative results produced in developing a methodology for ELINT evaluation by a USIB committee working group.[1] The task addressed ELINT evaluation in terms of Electronics Order of Battle (EOB) data and technical intelligence: EOB is emphasized in this discussion. The collection assets considered included all first, second, and third party fixed and mobile ground and sea sites, and overhead collectors with any capability in the evaluation

[1] ELINT Evaluation Working Group SIGINT Committee. United States Intelligence Board. *PILOT ELINT EVALUATION PROJECT*. BYE-047-69. USIB SC 15.2/38. 30 April 1969.

area—all in all, an assignment problem involving about 70 collectors and 4,000 targets.

The Baltic area was selected for evaluation and data describing operations there during the first three months of 1968 were taken as representative of ELINT activities in general. The data was collected by the Defense Intelligence Agency under a study program to evaluate activities of the Department of Defense. The data and results of the DIA study provided a base for the ELINT Evaluation Working Group.

Overview of the Problem

Analysis of the data threw light on a number of problems of which there had been a general awareness prior to the study. For example, it was determined that an average of 137 days was required in order to process requests for ELINT collection through DIA and NSA. That much delay of course meant that the prospects of getting useful information subsequently were rather dim. There were 64 SIGINT information collection requests applicable to the pilot evaluation area throughout the 90-day period, but only 23 requests received any response. Suprisingly, many reports were made against requests which had been cancelled or were otherwise of no interest. The number of these non-valid requests which received responses happened to be identical to the number of valid requests which received responses—23. The shocking finding was, however, that of 4,454 technical collection reports, 3,390 were against the *non-valid* requests.

ELINT reports addressed to requests for technical information accounted for only about 5 percent of the total ELINT reports during the study period. Reports pertaining to electronic order of battle (EOB) comprised 94 percent of all the reporting, and to general search for new and unusual signals, 1 percent. This distribution is shown in Figure 1.

In electronic order of battle, signals which are very easily obtained are reported to a point of supersaturation, while signals which are difficult to obtain, but of great interest to the analyst, are rarely reported. The distribution of reports according to type of ELINT emitter is shown in Figure 2. Early warning radars, for example, which must be on a high proportion of the time in order to perform their function, accounted for 66 percent of the reports; early warning radars, height finders, and aircraft control radars together accounted for over 90 percent of all the reports.

A report of the continued existence of an emitter once every three to six months is generally adequate for order of battle purposes. The fact that air traffic control radars, for example, were reported on an

Figure 1. Distribution of ELINT Reports.

Type of Emitter	Percent of Reports
Early Warning Radars	66
Height Finder Radars	19
Air Traffic Control Radars	6
Fire Control	4
Ground Controlled Approach	2
IFF	2
All Other	1

(Coastal Surveillance, Data Transmission, Target Tracking Meteorological, Navigational, Surface Search, Surface Fire Control, Missile Guidance.)

Figure 2. Distribution of ELINT Reports Among Types of Emitters.

average of 30 times during the 90-day period illustrates the extreme redundancy which characterized the reporting on emitters which were easy to intercept. In one case, a TALL KING early warning radar was reported by one of the ground collection stations a total of 2,320 times during the 90-day period—more than once an hour. Clearly, the EOB effort was poorly coordinated and highly inefficient. The great volume of reports was perhaps a detriment to the interception and identification of more valuable ELINT emissions. Further, such collection operations imply that reporting and processing organizations are going to be overworked, or glutted, or both.

In view of this dismal picture, it would not be surprising if some of the data used for the study contained errors. It is, nevertheless felt that the study gives a good picture of our current problems and needs. The chaotic state detailed in the study report, however, is only part of the problem. There is no central file in which information on ELINT emitters is consolidated and maintained, nor is there a file in which all the requirements are maintained. Finally, there is not even a complete list of emitter names, notations, or descriptions of technical characteristics within the intelligence community which may be used as a reference even for communications about emitters.

An ELINT Model

To determine how effectively and efficiently ELINT collection might be made to operate, a model was developed in which both the geographical and technical characteristics of all the emitters in the study area were represented in relation to the characteristics and locations of all the collection facilities. Because specific technical information requirements were not available in the detail required,

and because the bulk of the reporting was for electronic order of battle, only EOB and general search information was used to demonstrate the use of the model. The computer was programmed to task the various collection facilities automatically so as to obtain the intelligence data of greatest value. This was done by assigning values to each emitter based on the subjective judgment of skilled ELINT analysts, having regard to the function performed, excellence of performance, location, and the elapsed time since the emitter had last been intercepted. Knowing the capability of each collector to obtain the signals from any emitter, the computer tested collection assignments in a systematic way so as to achieve the greatest value from the entire team, rather than maximizing the value of the collection for the individual stations. Because some of the emitters were not expected to transmit, and because there was no equipment in the stations capable of searching through some frequencies in search of new or unusual signals, electronic order of battle and general search information that could be collected by the ensemble of collectors representing the available facilities was limited to 84 percent of all that was desired.

To illustrate the capability which the model provides the ELINT manager, each one of the various types of collection facilities was eliminated from the ensemble one at a time, and the remaining facilities retasked in order to again optimize the collection operation. As shown in Figure 3, the elimination of all of the ground stations, for example, results in only a slight reduction of the total EOB—general search collection capability. This emphasizes the great redundancy which was so obvious from the data collected during the 90-day period.

In addition to determining the effect of eliminating any particular type of collection activity, calculations were also made to determine what each type of collector could obtain if it were the only collector operating in the area. This information is also shown in Figure 3.

The effect of additional collectors on the tasking for any one particular collector is dramatically illustrated in Figure 4. One ground station could see 659 different EOB ground emitters in the model, a number of airborne emitters, and a number of general search objectives. If the other ground stations were also operating, the tasking against the ground EOB objectives for the station reduced by about half. If airborne and other mobile capabilities are added, the tasking shrinks to approximately 70 out of the 659 ground EOB targets. From the point of view of the station commander it might seem best to concentrate on collecting the most highly valued targets and on all easily intercepted targets in order to obtain the greatest possible "score" for the station. As the station is tasked to concentrate on

Figure 3. Effects of Deleting Various Collector Types on EOB & GS Collection Capability, and Capability of Each Type Operating Alone.

Environment	Observable			
	Ground EOB	Air EOB	Sea EOB	Gen Search
Access	659	42	0	155
Alone	642	34	0	3
With other ground sites	347	37	0	19
With all collectors	70	32	0	7

Figure 4. Tasking for a Collector Operating Alone and with Other Collectors.

fewer and fewer emitters, its net score decreases while the total score of the team with which it participates increases. To some extent this situation is analogous to that of a sports team. Although a basketball team might score pretty well if all its members ignored each other and simply took shots at the basket at every opportunity, such an approach is obviously inferior to one in which the players work together to maximize the team score.

To illustrate another type of examination, the four ground stations submitting the greatest number of EOB reports during the 90-day period were eliminated from the ensemble one by one. Dropping any one of these stations from the model resulted in less than one-tenth percent loss in EOB—general search collection. The effect of losing all of the collection facilities in Berlin was also determined, and this loss is also small providing the rest of the ensemble is retasked to achieve optimal collection.

Other Considerations

Perhaps the greatest hazard in this kind of study arises from the tendency to disregard the ground rules within which the model operates and to treat the alternatives as if they were objectively feasible. In modeling, a balance must be reached so that in simplifying reality enough to make systematic thought and calculation feasible, the results do not become inapplicable or meaningless. To approach the working of the model in reality would involve, for example, modification of command lines to permit the centralized tasking management required to coordinate the collection activities. It is not customary for the directors of the Department of Defense agencies involved to control directly activities which are parts of theatre or specialized commands. Questions of conflicting tactical employment of the facilities involved would no doubt arise. It may be that existing communications nets would not support the loads imposed by cen-

tralized tasking management. Further, in order to perform satisfactorily in the dense electronic environment typical of the Baltic area, semiautomatic equipment might be required. Above all, no allowance has been made in the model for political or economic considerations associated with these activities.

Even though much remains to be done before any definitive action could be recommended, several important things have been accomplished. The data requirements for the analysis initiated an ordering of the ELINT requirements and an assessment of the holdings, especially with regard to technical intelligence. This information simply did not exist in a usable form. An initial set of values indicating the relative importance of collection of EOB information has been developed. A reasonably realistic, flexible, working model has been built and operated. It provides an appreciation of what could be accomplished under ideal conditions, and it can accommodate a variety of alternate approaches in developing this ideal, such as eliminating or adding various collection activities. It can readily be adapted to evaluate ELINT collection on a world-wide basis and, at the same time, it can efficiently perform tasks of smaller scope, i.e., determine the optimum tasking for a single collection activity. Above all it provides an open and explicit form against which all of the factors affecting ELINT activities can be discussed and appraised.

What remains to be done? Politically and organizationally feasible approaches for improving ELINT operations need to be identified. The particular model studies required to assess these various alternatives need to be selected. These steps are prerequisite to a complete analysis which would identify feasible alternatives, and weigh their pros and cons in terms of political, economic, and other important facets. Systems study may often be a convenient device for the graceful non-solution of politically sensitive problems. Indeed, the large and versatile model which we have examined, in which the assignment of over 5,000 objects may be varied among 70 or more different collectors should provide almost the ultimate in non-solution, if that is what is wanted. The non-solution alternative is not, however, likely to be chosen.

This brief description of the development of an ELINT evaluation methodology, and its potential use in typical collection asset management problems, may suggest other areas in which difficult assignment of resources to needs situations may be illuminated through the use of operations research techniques.

A live query against three community automated files.

WHO HAS THE INFORMATION I WANT?

John C. Morfit

An astronomical amount of information is being put into files each day in the intelligence community, but can the analyst with a problem find everything he needs in one spot? The idea seemed a simple one to begin with: run an identical live query against the CIA, NSA, and DIA data retrieval systems. The results should permit a comparison of the systems' usefulness.

An analyst from CIA's Office of Scientific Intelligence (OSI) who had a suitable problem and was just beginning his research effort agreed to cooperate.* We met in early December 1969 and formulated what we hoped would be an "identical" query with which to test the three systems. The problem concerned Soviet nuclear submarine life-support systems, particularly submerged endurance capabilities, and habitability. The analyst's branch had little data on this subject. Contacts told us there was "nothing in the files" on this somewhat limited and esoteric subject, but we persevered. We soon found that getting information from files is not as easy as it first looks—or is described by systems' propagandists. Our query involved all classifications and originally sought data from 1958 to the present. The initial query sought information on eight individuals by name, on nine major topics and on twelve secondary topics.

Query Against CRS Systems:

The problem first was presented to CIA's Central Reference Service and an answer promised and delivered within a week. The lengthy response time was attributed to the biographic request; the machine response, it was said, was ready in 24 hours.

CRS's current main data retrieval system, AEGIS, turned up 88 citations from a data base of some 700,000 items. Of these, the analyst already had a few, some were of possible interest, and nine were considered useful. Since the query extended back in time prior to

*The following persons took prominent parts in the true life drama described: Dr. Kit Green, Mike Russell, Dick Smith, C. J. Smythe, Bonnie VanWagner, Dr. Maurice Hellner, Dan Gagon, Charles Sheppard, and George Derosier.

AEGIS, it was run also against the predecessor system, Intellofax, a data base of 12 million items. It turned up 49 documents, of which 17 proved useful.

The biographic request resulted in six folders with approximately 600 documents. There was considerable duplication between folders as a result of multiple authorship. Although a few documents were serendipitously useful for another project, none of the 600 was considered directly related to the problem at hand, and names were not used in formatting subsequent queries.

Although the original search had been requested to be all-source, no run was made initially on CRS's old Special Registry (SR) files, a data base of about eight million items. Following a second request, a run was made in mid-December and turned up a listing of 200 items, from which the OSI analyst weeded out duplicates, leaving 80 separate titles. Of these, 17 documents were ordered and, for the first time, ten proved to be directly related to the problem. Seven of the ten were NSA documents and proved to be highly important to the research problem, despite their age—1958–59.

This completed the first round with the CIA systems and took approximately two weeks, one due largely to the biographic request. Excluding the biographic material, more than 200 document title citations had been retrieved from data bases totalling 20 million and of these, ten documents proved to bear closely on the subject. The analyst spent a few weeks mulling over the material and we then approached NSA and its HARVEST system.

Query Against HARVEST System

Our approach to CRS for a HARVEST run resulted in a consultation of the analyst with two NSA representatives of the HARVEST system. This system has a data base of approximately 1,500,000, consisting of full-text items on which searches are made using key word terms and modifiers. In addition to dropping the query against names of individuals, 12 new modifying terms were added to better fit the HARVEST system. It was learned that the HARVEST data base extended back only to 1964, and naval material only to 1966, so that direct comparison with the CIA system would be impossible. When asked how NSA would retrieve prior information, the answer was they would refer to CRS's Special Registry data base for naval material prior to 1966.

The HARVEST batch run is regularly made on Fridays, so our Thursday request had an answer on Monday. Four separate queries were run: "submarine" with all the medical and life support modifiers (some 25–30) with 150 hits, (two useful); "electrolytic oxygen" with ten hits (none useful); "superoxides" with no hits; and "air" and

"submarine" with 2,367 hits. The latter was rerun the next week, adding some additional negation terms to weed out the "garbage." NSA also did a run on additional files they had of early HARVEST material using "submarine" and all the modifiers. This produced 95 hits, but none was useful. The second HARVEST query cut down the 2,367 to a more reasonable 900–1,000 full-text documents. The analyst perused these and picked out eight which appeared to be useful (five were new).

> The NSA queries thus resulted in a response of some 1,200 hits and ten documents appeared to be directly related.

Two questions arose: Were the ten NSA documents turned up by HARVEST actually in the CIA files but missed? And why were the seven NSA documents turned up in the AEGIS and SR runs not turned up by HARVEST? In answer to the first, a check of the CRS systems showed that eight of the ten HARVEST items of interest were indeed in the files but they had been indexed under their principal topic, nuclear submarines, and not under any of the life support or medical terms used in our queries. The information concerning life-support systems was buried in paragraphs deep in the reports, was but a minor topic among many in the reports, and was not mentioned in the title, summary, or contents. In other words, the CRS system of indexing could not have been expected to turn up those documents, whereas the full-text search by HARVEST did so.

As to the seven NSA documents not found by HARVEST, it turned out that they predated the HARVEST system. All NSA documents covered by the time periods of both HARVEST and the CIA systems were retrieved by both systems.

Further Queries Against CRS Systems

After making the HARVEST query and studying the results, the analyst decided to ask for a rerun against the CRS systems—adding the 12 additional terms used by HARVEST, expanding the original search strategy to world-wide (the original search had been limited to Soviet), but excluding terms related to spaceflight life support systems. This expanded run resulted in 16 hits in the SR files, one of which was useful. Intellofax turned up 67 hits; four documents were ordered but none was directly related. AEGIS turned up 30 citations, none of which was pursued. There were no useful "world-wide" documents.

At this point, and it was then March, the analyst was thoroughly intrigued with how to get information out of the various systems—an intelligence problem all by itself! The CRS analyst we had been work-

ing with was transferred to another area (a not uncommon experience for a user querying a file over a period of time), so we started afresh with one who knew comparatively little about the systems, particularly the SR file, which was proving to be the most productive.

The OSI analyst studied the coding books which had been used by the SR indexers and came up with five "commodity" codes and two "use" codes that seemed to bear on his problem. He was able to pick out these terms because of his scientific and technical background, whereas they had been by-passed in the previous runs by the generalist CRS analyst.

Using these commodity and use codes, two initial runs were made; one on material prior to 1958, the other since 1958. The results on material prior to 1958 gave 900 hits or citations, of which 37 were ordered. Of the 37, nine proved useful. On the more recent material, there were 20 hits, and ten documents ordered; five proved useful but four were duplicates from previous runs. Results of these runs indicated that some use codes were more productive than others and suggested additional ones. A new run resulted in 193 hits, approximately 50 useful documents, and 25 directly related, of which three were new. A further run was made using only four of the five original commodity codes and without the use codes. This resulted in about 100 hits but none was useful. Some of the ten HARVEST-retrieved documents were noted, but others predated HARVEST.

> The second round of queries against the CRS systems thus produced more than 1,300 citations and 31 directly related documents. Both rounds together resulted in more than 1,500 citations and some 40 directly related documents. However, of the 40, less than ten concerned both the subjects being hunted—life support systems *and* nuclear submarines.

Query Against DIA Systems

April was upon us when we explained what we were doing to DIA officials. They were cooperative and eager to find out what their systems would produce. They took our original query and the topics used by HARVEST, but deleted the biographic names. Following a discussion of the problem with the analyst, which produced a list of 38 additional terms, they transformed all these into words their system understands, the ISC or Intelligence Subject Code, emerging with a list of 67 terms to be used in the DIA search.

Searching four separate files of some 200,000 DOD and CIA Intelligence Reports, differentiated by date of report, almost 2,500 hits were scored. Of the 67 terms used, 27 proved productive. These terms were general and the 2,500 hits were weeded down to 65 documents

by the DIA searchers. This type of weeding obviously takes considerable time, about six weeks in this case, and effort. Of the 65 documents, the CIA analyst classified them as:

21 of no use to his problem
26 of only general background value
15 in the general area and useful (five new)
3 of direct application (two new).

DIA also has, in Rosslyn, a remote terminal tied in to the files at the Air Force's Foreign Technology Division (FTD) at Dayton, Ohio in a system known as CIRCOL, Control Information Reference and Control On-Line, with a data base of 400,000. Our CIA analyst spent a day at the Rosslyn office, learning how to use the terminal and then querying the files. He used 12 general terms, close to those in the original query, but was able to refine his search by using "negation terms," e.g., enclosed environments, but *not* space-related. His efforts produced a hard copy listing of 902 hits or citations of titles of documents both unclassified and classified up to Secret. This was the first file to have extensive holdings of unclassified open literature material and for that reason was of great interest and surprisingly productive.

The analyst looked over the 902 titles and of the unclassified material ordered 31 documents: 6 proved to be old, but 25 were new; 28 were of general use and three were of direct application to the problem and one was new. Of the classified material, 60 documents were ordered; 38 were of no use, 22 were useful (10 new), and two of those were directly applicable but not new. Since CIRCOL contained only citations and extracts, full-text documents had to be obtained from other sources, taking about six weeks.

The DIA queries thus resulted in close to a thousand citations and eight documents directly related but 42 new items, including 25 unclassified ones. Tabulation of the results from each of the systems is shown in the table. Of some 3,700 citations, only 1.6 percent proved directly related to the problem while 5.5 percent were "useful."

What Have We Learned?

What are we to conclude from this live query exercise? There is much for users to learn and also some pointers for system custodians.

With regard to our original aim of comparing various systems, we conclude that it is meaningless, if not impossible, to compare systems with differing data bases, covering different time periods, built for different purposes, queried in different ways, and with differing types of output. A research analyst, for comprehensive coverage of his area

of interest, must tailor his request to each system and query each one individually with the help of information specialists who know the system. His results may overlap to an extent, but he is likely to find something new in each one.

Analysts should not overlook "old" materials; for this particular problem the old files proved most productive of high-quality sources.

Analysts seldom should be satisfied with a single run, but must keep refining their queries on the basis of achieved results. Some 20 runs were made for this problem. This is much like an eyeball search of a card catalogue in a library: initial topics may be successful, but most often they suggest more productive further search topics. In this case, more than two-thirds of the intelligence information recovered on the topic was contained in the CIA systems alone. The intelligence analyst, however, will want the remaining third, and the scientist-analyst will insist upon it.

To successfully exploit a system, the analyst must become familiar with the system, know the type of information it contains, its capabilities and drawbacks, even to studying how the indexing was done. Once an analyst becomes familiar with a system, his knowledge is transferable to other queries against the system.

On a subject search of the type described, the analyst must be willing to search many hundreds of citations and documents for the nuggets he is looking for.

The production analyst must sometimes learn along with his information specialist counterpart. Their cooperation is vital to success and each can help the other if there is communication between them. They should avoid the "analyst gap!" The information specialist should take the initiative in suggesting searches of other than the obvious systems and of systems in other agencies. Included in this is the further responsibility to continually elicit feedback from the requestor, both for up-dating and modifying the runs, and for deriving new terms. For his part, the production analyst must recognize that his personal files, even if accumulated over years of specialized study, may be less complete than those within the intelligence community, however more easy to use. Unless the production analyst and the CRS-analyst form a team, key items of intelligence will probably be missed, and the data retrieval systems will certainly be inefficiently used.

QUERY RESULTS

File	Run	Citations	"Useful"	"Directly Related"
	CIA Systems (First Round)			
	(20,000,000 data base)			
AEGIS	1st	88	9	0
Intellofax	1st	49	17	0
Special Register	1st	80	17	10
First Round Subtotal		217	43	10
	CIA Systems (Second Round)			
AEGIS	2nd	30	0	0
Intellofax	2nd	67	4	0
Special Register	2nd	16	0	1 (new)
	3rd (b 1958)	900	9	0
	4th 1958	90	50	25 (3 new)
	5th (a 1958)	20	10	5 (1 new)
	6th 1958	103	0	0
	7th 1958	100	0	0
Second Round Subtotal		1326	73	31
CIA Subtotal		1543	116	41
	NSA Systems (1,500,000 data base)			
HARVEST	1st	160	0	2
	2nd	900–1000	0	8 (5 new)
Early HARVEST		95	0	0
NSA Subtotal		1155–1255	0	10
	DIA Systems (600,000 data base)			
ISC	1st	65	41 (5 new)	3 (2 new)
CIRCOL	Unclassified	400 (approx)	28 (24 new)	3 (1 new)
	Classified	500 (approx)	20 (10 new)	2
DIA Subtotal		965	89	8
TOTALS		3700 (approx)	205 (5.5%)	59 (1.6%)

Intelligence doctrine re-examined

WHAT BASIC INTELLIGENCE SEEKS TO DO

Joseph W. Martin

This paper seeks to open a discussion of basic intelligence doctrine: that is, of the objectives this type of intelligence should aim at and of the standards by which effective performance in it should be judged. This kind of discussion—which, I believe, was one of the things *Studies in Intelligence* was originally founded for—is not likely to end in full agreement but, as experience with other types of intelligence has shown, does offer the prospect of reducing the area of disagreement and making the product more sophisticated and more useful to the consumer.

The files of *Studies in Intelligence* to date show a near absence of papers taking this approach to the subject, though there have been a number of good factual surveys of particular basic intelligence programs. The omission is probably due to the topic's being widely considered lacking in interest rather than lacking in importance. "Basic intelligence" is denominated one of the three main categories of intelligence in Sherman Kent's *Strategic Intelligence* (i.e., the "basic descriptive element" along with "current reporting" and "estimates of the speculative evaluative element"), and the community's principal basic intelligence program, the National Intelligence Survey, has in the past year or so undergone extensive examination and review—the most recent of a number of such comprehensive reviews. Considerable attention has also been given to the statutory basis of the NIS and to its administrative aspects.

The present paper is not concerned with matters of statutory authority or administration but with intelligence doctrine. Since it seeks to open a dialogue on this subject, it begins necessarily on an elementary level and states somewhat dogmatically a number of definitions and main propositions as a basis for discussion. The value of the effort will depend very considerably on its success in stimulating expressions of informed opinion from other concerned persons—those concerned as consumers perhaps more than those concerned as producers.

Part of the difficulty the "basic descriptive element" has always labored under may be a simple matter of nomenclature. To some ears, the term "basic intelligence" sounds so elementary as to be quite

without interest; to others, it tends to have the slightly moralistic connotations of "essential" and to offend by its seeming pretentiousness. But the concept itself is simple enough and should be non-controversial. It is perhaps better to start with the concept of "the reference document," a concept which rightly puts the emphasis less on the information itself than on a user's need for the information. Reasons for including any given set of data in a reference document are essentially pragmatic: (1) it is information likely to be needed by many persons for many purposes ("central" information might be a more accurate term than "basic"); and (2) it is information capable of being so organized that it can be turned to readily. Essentially the reference document is a money-saver because, human memory being what it is, the alternative to one reference work serving many people, is often a series of *ad hoc* documents each serving a half-dozen or so.

A modern industrial civilization could not operate without a wide variety of reference documents—with forms and contents varying widely according to the special concerns of their intended users. *The Morning Telegraph*, the racing man's Bible, is very different from *The Wall Street Transcript*, a weekly compilation of financial evaluations from various informed sources—and only a person specialized in both horse racing and corporate finance could come close to determining which is really "better." The continuing financial solvency of each publication is, however, a rough indication that each is satisfying a valid consumer need.

The subject of special concern to the US intelligence community—international affairs—is no less complicated than horse racing or corporate finance, and is considerably more difficult to deal with in an official reference document. One difficulty is that the subject of international affairs is less sharply separable from the rest of the universe and, partly because of this, the prospective readership much harder to envisage and define. The man who turns to *The Morning Telegraph* or *The Wall Street Transcript* may be presumed by the producer to be already knowledgeable about horse racing or corporate finance and reasonably clear on what he is looking for.

Not so with the man who turns to a government reference document for information on South Ruritania or East Parastatia. This presumed reader may be either an expert on East Parastatian affairs who wishes to check the exact age of its ruling general and the relative standing of its three most important export commodities or, at the other extreme, a US general's briefing officer who is not quite sure just where East Parastatia is but who within the next hour must give his boss a fill-in about an attempt still in progress to assassinate the Parasta-

tian dictator and seize the government. Or, less dramatically, the reader may be a civilian or military official about to proceed to a new assignment in East Parastatia—or possibly at the capital of its bitter rival, West Parastatia. Some of these various readers may be presumed to have ready access to such non-government reference books as the World Almanac, the Statesman's Yearbook or the Encyclopaedia Britannica. Each reader, moreover, will naturally want to find the Parastatian information important to him with a minimum of dilution or delay caused by the presence of the other reader's Parastatian data.

A second difficulty for the reference work on international affairs is more serious. A good non-governmental work like the Statesman's Yearbook will meet most needs for purely factual non-classified data about any given country. But legitimate government needs also include military and political data which is normally classified and, more difficult still, go beyond mere hard factual data to involve judgments and evaluations of complex situations from the standpoint of US security interests. More important than just the size of East Parastatia's armed forces or the nature of their equipment are their loyalties to the ruling dictator, their relations with the traditional political parties or the labor unions and their prevailing orientation toward Moscow or Washington. Questions such as these go beyond the capabilities of a privately produced reference work and indeed tax those of the government as a whole. In really critical or fluid situations they are in part the subjects of national estimates, and even in relatively routine situations there is an evident advantage for the US official in being able to turn to a reference document which is coordinated national intelligence.

Criteria of excellence

What, then, is excellence in a reference document? I would like to propose three main criteria: systematic in its fundamental organization, clear and precise in its detailed presentation, realistic in what it seeks to include. Thus blandly put, these criteria probably attract little dissent; controversy arises when their implications are more extensively explored. All three criteria rest on the premise that the essential problem of the reference document is not recondite research but effective communication.

A reference document needs to be systematically organized primarily in the sense that it is part of a system; that its producers have recognized that their task is not just to manufacture a product but to provide a continuing service. The reader consulting a reference work

naturally needs assurance of its validity but, second only to this, he needs to find the desired information quickly and, if possible, be given a little guidance on where to find further data on the same subject. And—a point often overlooked—he is also helped by some prior assurance that the reference work will be there to consult. Meeting these varied needs for a wide variety of readers necessarily requires a considerable degree of standardization in the way a reference work is organized internally; it also requires the external organization that will ensure the work's remaining in print and being adequately disseminated. It is these characteristics of organization, not just the nature of the contents, which establish the reference work as a distinct genus.

The importance of system for a reference document is easy to underestimate or even ridicule, since no standard plan of organization is ever likely to fit a particular case precisely. At any given moment, moreover, there is also certain to be a more exciting way to tell the story than the way the reference document does it. Most of us can remember from our college days at least one lecture in which the speaker held his audience spellbound by starting with a very minor detail and skipping around in a seemingly chaotic fashion, yet covering by the end of the hour all relevant aspects of the subject with a vividness and memorability absent from more conventional presentations. But however successful as an occasional teaching technique, such a way of organizing information is no model for a reference document. Here the readers must be presumed to be seeking plain information and not entertainment, and a substantial proportion of them to be seeking not the total picture but specific facts or judgments about some part of it.

Another and more topical kind of illustration may also be pertinent. During the course of any given year, the Washington visits of foreign chiefs of state and the corresponding trips of US dignitaries abroad are likely to produce a number of excellent intelligence memoranda on the countries concerned—memoes which, along with the very current matter addressed to the immediate occasion, also contain much sound basic intelligence often more attractively stated than that in a standard reference work. Yet a memo of this sort, no matter how perceptively its basic intelligence is presented, is no real substitute for a standard reference document on the country, since (a) it will probably go out of print soon after its original dissemination and (b) having been originally designed for one particular occasion, it is unlikely to be ideally organized for a number of quite different purposes at later points in time. The general nature and influence of one of the country's

opposition parties may, for example, be given very glancing attention in a "backgrounder" on its president's visit to Washington, but this may be just the subject on which a subsequent reader would want a quick evaluation.

"Systematically organized" of course includes having the data appear in a pattern that most people consulting the document will find compatible with their own particular interests in turning to it. For works on international affairs the most useful initial category is generally agreed to be countries—rather than economic commodities or weapons or diseases—but there seems to be no firm rule on the order of categories within a given country. Uniformity in treating widely different countries is neither necessary nor desirable, but the reader does have a right to expect a certain standardization among reference documents in the same series and a plain indication in the table of contents of the pattern being followed in that book, an indication couched in terms immediately familiar to him. The complaint has more than once been made regarding the NIS General Survey, for example, that "manpower" as a sub-section of "sociology" is a somewhat forbidding category to confront a man who wants to find out in a hurry how powerful the country's trade unions are and whether they have any extensive record of Communist infiltration.

The second criterion of excellence—clarity and precision in the more detailed presentation of data—is of course always accepted in principle, but frequently with insufficient appreciation of what must be done to meet it adequately. It is too often forgotten that the primary task of intelligence is to get a fact or judgment from the inside of a specialist's brain to the inside of a layman's, not simply to state it in words which a fellow specialist can certify as not irrelevant and not untrue.

The user's needs are positive; whether he is novice or old hand on the country, it will do him little good to encounter either bland generalities or esoteric allusions. The novice will not be much helped by a delicate reference to declining Communist influence in East Parastatia based on the tacit assumption that "everybody knows" there was a pro-Communist regime there in the late 1950s. The old hand can only be exasperated by being told that the country experienced trade and payments difficulties in the mid-1960s, when he is trying to check on how serious these difficulties were and whether the critical year was 1964 or 1966. To convey the needed information effectively to two such different readers requires a kind of flexibility and imagination which not all analysts have. The producer of reference works, moreover, should write in the expectation of his product's remaining

usable not merely for a week or two but perhaps for several years, and he must do his job without the psychological boost which people often receive from dealing in headline material ("It's happening right *now*"). Furthermore, the complexity of his subjects gives him no valid license to be ponderous and murky in his treatment of them; it creates rather a special need for his language to be crisp and clear.

The third (and most easily misunderstood) criterion of excellence in a reference document is how realistic it is in what it seeks to include. The critical questions to be asked are really two—though many people stop with the first, which simply inquires what are the central facts and judgments about a country which a US official might want to know before taking action. The corollary question—necessary but often overlooked—is to inquire which of these facts and judgments can be effectively communicated through this particular reference work, given its agreed size, processing time, revision schedule and the like.

Since the canon of relevant intelligence for the senior US official obviously includes much current reporting and estimative material, there is a natural tendency to stretch reference works to take in much of these categories also. I see no absolute objection in principle to doing this, but at least two powerful limitations in practice. One is mechanical and almost inescapable: unless organized like a newspaper throughout, a reference work cannot hope to stay abreast of the news ticker. Everyone accepts this fact intellectually, but the dream dies hard of having a single document which will provide all the answers for, say, the rushed and harried briefing officer suddenly confronted with the attempted coup in East Parastatia. A reference work on the country which is only three weeks old will naturally be more convenient for him than one three years old, but it will in itself provide no guarantee of accuracy, since the events he is chiefly concerned with are probably those of the past three days or three hours. In a world of unlimited intelligence resources one might seek to ease his difficulties by decreeing that every reference book in the series be updated every three months, but a more realistic approach is to insist that each work be so arranged as to make its relevant information quickly accessible to the uninitiated reader and, if possible, provide him with leads to more detailed and current publications on the subject.

The other limitation derives from a reference work's need for a certain detachment and perspective such as is extremely hard to attain regarding particular events still in progress or judgments still in controversy. By and large, it is probably more useful for the reference document to avoid very recent detail and to confine itself to

those judgments which have become generally accepted in the intelligence community—what is sometimes pejoratively described as "the conventional wisdom." It seems to me important, however, for the reference work to make sure that these evaluations are within the conventions of the present, not the past; to insist that its successive editions do not simply go on repeating the evaluations of, say, the Stalin era in tone if not in explicit statement.

Just which central facts and received judgments can be efficiently included in a given reference document must probably remain a matter of informed human judgment, at least till machinery for obtaining meaningful consumer responses becomes more highly developed than at present. Nor is it really an economical use of limited resources to try and determine revision schedules just by formula, i.e., strictly by elapsed time since the last edition. For reference works consisting almost entirely of statistical resumes and lists of officeholders, this can be a quite valid method; most statistics are issued on an annual basis, and life expectancy tables apply to government officials as to anyone else. But for more complicated reference works concerned with basic evaluations of larger political, economic and social entities, the strict elapsed-time formula is likely to prove crude and inefficient. It is actual events, not the mere removal of leaves from the calendar, which causes such reference works to go out of date. One country of course changes more rapidly than another, and the same country may change more rapidly in one decade than in another. To cite a somewhat extreme example, an NIS General Survey on Cuba produced in late 1958 (i.e., just before Castro) would have been more out of date in its basic evaluations by mid-1960 than one produced at the same time on the Netherlands would have been by mid-1970.

Naturally, every user prefers a recently published reference work to an old one, just as he prefers his car to be this year's model and his office to be one with a fine view from the window—and the prestige of having such preferences gratified may in certain circumstances have a validity of its own. But, to continue the analogy, it is not realistic planning to equate such gratification with economy of transportation or the most efficient way of conducting the office's business.

The question of importance

At this point it may be asked: granted that these are indeed the proper standards of excellence in a reference work, why is having excellent reference works a matter of any importance? I believe there are at least three reasons why.

The first reason might be considered budgetary, in that it concerns the most efficient use of limited resources. To state the principle figuratively: it is of course well recognized that the very best rifles for big game hunting are still handmade (and these, besides their greater precision of operation, are also an addition to the user's social prestige), but for most workaday uses of weaponry, the world long ago learned that the unromantic assembly-line product would do. In terms of intelligence production in a period of growing budgetary austerity, the question may well arise as to how many of the needs for background memoes might not be met by a standard reference work and a few updating paragraphs rather than by a whole new handmade product. (I am speaking, of course, only about *ad hoc intelligence* memoes—not, for example, about the necessarily custom-made paper on what policy lines to pursue toward General X's dictatorship in East Parastatia, but of an intelligence memo describing the general status of East Parastatia after 18 months of the General's rule.) By no means all needs for background information can be met by supplemented reference documents but, with the rising competitive demand for research which really breaks new ground, the question of how many is likely to be asked with growing insistence.

The second reason I would cite for reference works' importance is the evident fact that many places—notably military commands—are so situated as to be denied ready access to most basic evaluative material except through reference documents. This point needs no elaboration here.

The third reason is in some respects parallel to the second. As some intelligence needs are too remote in space to be met by the more precise intelligence media of current reporting, formal estimates and *ad hoc* evaluations, so other needs are too remote in time—or perhaps too uncertain to predict safely. One must assume that other situations may arise like those arising a decade or so ago in Cuba and the Belgian Congo, where a country of relatively low intelligence interest suddenly became a hot spot when powerful figures there courted Soviet assistance. Even if the estimative process adequately foresees 90 percent of these situations, there remains the tenth case which still requires insurance.

One mechanism for such insurance is producing contingency intelligence—which in any given instance looks no different from any other reference document. The term applies simply to the reason for the intelligence being produced: to make sure that the US Government has available beforehand a modicum of central information about every part of the world and, beyond this bare factual minimum,

organized evaluative material on any country which, by reason of formal sovereignty, possesses the option exercised by Congolese and Cuban leaders when they called in Soviet advisers.

Basic intelligence performs this insurance role, it may be noted, simply by seeing to it that its reference material for day-to-day use is prepared on a suitably inclusive basis. (It does not, for example, try to foresee the special kind of intelligence that might be called for by the unexpected descent of a satellite in a remote part of the globe.) But the operative word for the contingency consideration is "inclusive." One cannot say, in scheduling the production of country surveys: "For most countries, yes; but surely the President of newly-independent Contracolonia will never be so misguided as to risk Soviet intervention. Let us, instead, use our basic intelligence resources on a country more people have heard of and are interested in right now." To act on this principle is to cancel the insurance policy.

Improving the product

A further question remains: can one find specific means—not just sterner editing—of making the US Government reference document on international affairs a more efficient mechanism?

I think one can—though I am also aware of some of the difficulties inherent in the nature of basic intelligence. For example, the structure and format of an encyclopaedia cannot be changed as readily as a daily newspaper's can, for issuances of an encyclopaedia are not replaced the next day but are expected to remain in use for a matter of years. I also recognize that improvements in government programs involve administrative problems and affect related programs also; excluding administrative problems from this paper does not mean that I am unaware of them. Some possible lines of improvement, such as more extensive use of consumer surveys and of the resources of automatic data processing, I leave to be discussed by those more knowledgeable in these specialized fields. But there are two particular lines on which I would like to initiate discussion here.

The first amounts to urging a more critical look at the present intelligence-producing needs of the government, in the light of the massive research effort mounted by US universities and affiliated research institutes on the non-European world over the past two decades. The intelligence community has already reacted to this effort in part. Few would now consider it necessary for the main aspects of even a small and remote country—and the longstanding forces that work against basic US interests there—to be thrust uninvited on the policy-maker's attention in a current intelligence memo rather than kept ready for

him on call in a standard reference document. The scope of what is considered necessary for embodiment in formal classified "basic intelligence" has likewise been much reduced. The NIS program, which in the late 1940s set out to cover some 50 different aspects, each in a detailed section, of every country in the world, has formally dropped over half of these detailed sections and now concentrates on a General Survey, covering in a single integrated volume the principal aspects of each country as these are considered to relate to US security interests. But I would still wonder how fully the intelligence community has recognized its activities as essentially supplementary to the larger American effort—public and private—and conceded that more of its own attention should center on facilitating, by various means, the government official's access to these other sources of information.

The principle of "supplementary and facilitative" provides no magic formula in itself but does suggest a way of using limited government resources to maximum advantage. For some parts of the intelligence effort the problem seems to be largely one of suitable awareness and, in the broad sense, translation. In the field of reference documents, one might assume the government task to be that of producing a set of nationally coordinated country surveys providing contingency coverage on each of the sovereign states of the world and seeking to outline the US relationship to that state; beyond this, the burden of proof would lie on those maintaining that the US Government needed to undertake the additional research task itself. This need would be easy to establish on subjects like the armed forces and the intelligence systems of hostile powers, where the importance is obvious and the significant data classified and hard to get. As easy to determine on the other side would be the case of the economic and social affairs of Western Europe, where the US is well served by a wealth of open sources. In between are a great number of other cases where the decision might seem far from open-and-shut. These might include sociological research on minor African countries, where the data are not classified but sometimes hard to get and the subject often of little interest to non-government publishing enterprise; transportation research in which military or other government requirements may be markedly different from those of the economic world; even possibly some political research on subjects so controversial that the value of the end product for government use would be enhanced by its being officially sanctioned.

The second line of improvement for the reference document lies in constantly remembering that its critical problem is effective communication—reaching the reader's mind, not merely the page in front of

his eyes. The mechanical costs of graphics are of course far higher than for ordinary print, and it is easy to dream up photomontages or three-color work which merely decorate the text. But it is necessary to remember also that graphics are a bargain for the US taxpayer when they significantly shorten the time a senior official takes to absorb needed information—though the cost accounting system for measuring this has not yet been invented. There is also some reason to believe that many consumers would prefer a more fanned-out, outline type of presenting basic data (with frequent use of standardized tables) to the solid paragraphs of intelligence prose that are prevalent now. But converting all existing presentation to such a new format is something else again. Aside from a genuine (but often exaggerated) danger of distortion if one tries to make the story too simple or too exciting in the process of increasing its communicability, there is also a writing problem for reference works produced by non-professional writers. Not every analyst has the writing skill and intellectual flexibility for this task of translation.

More immediately, there are a few simple things that can be done to meet some of the user's legitimate desires for speed and convenience. Detailed indexing takes a great deal of a producer's time, but it can also save a great deal of a reader's time. There is also help for the hurried reader in a generous use of headings and subheadings, so worded as to aim at the reader's interests and not just the writer's—and adequately picked up in the table of contents.

Many may disagree with these suggestions on communication, as indeed with a number of other propositions advanced here. But, as indicated at the outset, the purpose of this paper is not to pass judgments but to initiate discussion and set up a frame of reference in which such discussion can meaningfully take place. Those who are particularly in a position to forward the discussion are, of course, not the producers but the users of reference documents—those who in the past may have simply put a tick in a box on a questionnaire without stopping to explain what, specifically, they used the document for or what they hoped to find there and didn't. I trust that some of them may be moved to respond now.

Notes on how to find out things without seeming to presume.

THE ELICITATION INTERVIEW

George G. Bull

Not so long ago, during a tour of duty in West Germany, the author spent a good deal of time engaged in elicitation in the scientific sphere. What follows is intended to illustrate some of the features of this form of the art, the object of which, of course, is to obtain information without giving the subject the feeling that he is being interrogated. Elicitation, that is to say, like a lot of other tradecraft techniques, has its Scylla and Charybdis. On one hand, the cautious seeker risks concealing his purpose in such general questions or remarks that he evokes nothing of value. On the other hand, if the questions are excessively direct, the contact may quickly suspect he is being interrogated for intelligence purposes and bring the interview to an abrupt and unpleasant end.

The writer, who has a scientific background, was provided with solid, but not impenetrable cover. My task was to interview West German scientists in order to determine the nature and extent of their contacts behind the Iron Curtain, without, however, disclosing an intelligence association. If the person contacted appeared to have agent potential, he would subsequently be approached for assessment and recruitment by another individual without embarrassing my ostensible employer. It soon became clear to me that success in elicitation depends on the solution of several practical problems:

1. Devising an ostensible reason for talking to the potential source;
2. Locating the potential source;
3. Positively identifying him as the potential source;
4. Maintaining cover during the actual elicitation;
5. Keeping the potential source on the topics of intelligence interest.

In the course of an elicitation, I often found myself attempting to solve simultaneously problems 3, 4, and 5, while being subjected to a cross-elicitation, or sometimes a blunt interrogation of a friendly, but occasionally hostile nature.

The Reason for the Interview

Finding an ostensible reason for an interview was sometimes easy. Frequently, publications were readily available associating the indi-

vidual with one of the countries in which we were interested. For a prominent person, a *Who's Who* type publication often showed that he had been born, had studied, or worked in such a country. Sometimes the potential source had written about it or had received some sort of public recognition there, such as a medal or an honorary membership in a learned society.

Potential sources among the less prominent were sometimes listed in catalogs of specialists or translators of various languages. Sometimes college and university publications listed background items on faculty, students, and alumni of foreign origin. I found that saying I had seen my contact's name in such publications always seemed to allay suspicion or hostility, at least momentarily.

After deciding that a particular individual might be worth talking to, I would institute certain checks in an attempt to make sure he was not working for the opposition, or otherwise questionable, and therefore best left alone. Frequently the information that turned up was not derogatory, but instead furnished or reinforced a good excuse for an interview and helped to make it more friendly and fruitful than it otherwise could have turned out.

Although my cover gave me considerable latitude, the questions I asked nevertheless had to be consistent with a particular position in the US government. In such a situation one does not have the latitude of the free lance writer, something a contacting officer would do well not to claim to be unless very well back-stopped or already a well-known writer.

Interviews sought for the purpose of finding someone to do translations present other potential difficulties. The interviewer must be sure the material he talks about has not been translated already. He must provide the material and pay for it promptly. Word about "lots of interviews and no translation jobs" can quickly get around. Even where payment has been prompt, the specialists can become very suspicious, especially if newspapers have carried the story of a blown operation that had started with the "doing translations" approach to the agent involved. A mother in Gelsenkirchen said to me firmly, "My son does not want to do translations for the Americans." And there was the Offenbach school teacher, listed in a catalog of Russian translators, who bluntly asked, "Is this for intelligence, or really to do translations?"

If the potential source is very prominent, there will be special problems in eliciting information. He may have a tight schedule on a given day, and not be amenable to any questions other than those

immediately related to the stated reason for the meeting. The man who has pleasant relations with individuals behind the Iron Curtain presents another kind of problem, because often he is very fearful of losing his friends or causing trouble for them, if it gets out that he has had friendly meetings with an American official. Such people tend to be cautious and curt, or unavailable for interview. Sometimes this fear only arises after the person has agreed to receive the interviewer. Thus one of my meetings started with the contact saying, "Mr. Bull, I had hoped you were not going to come." In another situation of this kind, the subject knew I had had a tedious journey to his home near the Luneburg Heide. He reluctantly received me, but the interview was so stilted and concern for Russian friends was so frequently expressed that the meeting was soon over by mutual consent.

Sometimes the interviewer is fortunate enough to be able to make an approach under the auspices of a mutual friend, who has suggested the name of the target person as someone who should be seen. If the person is not too busy and receives the interviewer, the circumstances can be particularly favorable. Such a source is usually ready to talk freely, and the operative does not have to engage in subtle combat with any fixed idea that he has come to talk about some particular topic of no real interest whatever.

This use of a mutual friend is usually safe if one's role is limited to spotting, and ultimate recruitment is done by someone else. If the interviewer follows up later with an attempted recruitment, however, he of course blows his cover. He will probably alienate the mutual acquaintance, and perhaps lead the potential source to believe that this mutual friend has a relationship to intelligence which in fact he does not have.

If the information that the potential source has contacts in the Soviet Bloc has been obtained through a letter intercept program, one's ingenuity will be strained to the limit to think up a reason for an interview. Such intercept programs may disclose old friendships between an available person and one in the Soviet Union. A third person (such as the hopeful elicitor) is not expected to know about such a relationship and is likely to be told, as was the writer (not under his cover but fortunately under alias), "I had not heard from Sonya for many years. When I heard she was alive I wrote to her. Your people read my letter and sent you to see me."

Finding the Potential Source

Often the information that identifies the person as of possible value is old. He or she may have moved. In such a case the interviewer can find himself the target of an interrogation or elicitation operation by some friendly and helpful person who seems to demand as a price for the target's new address a complete life history of the hopeful interviewer and a detailed explanation of the planned business with the target person. How these questions are answered is very important. Such a person, say a neighbor, may well be in touch with the target before the contacting officer. Thus when finally located, the potential source may say he has no information and refuse to be interviewed.

If the interviewer is a stranger to the locality, he will probably find it useful to visit the city hall, where a directory of the inhabitants can normally be found. In Germany it is called the *Einwohnermeldamt*. It will furnish addresses gratis, or for a small fee, and usually no questions asked. In the city it is better not to ask directions from a policeman walking along the street. Find one tied down by traffic point duty. In one such case in Bayreuth the writer found himself in the clutches of a friendly officer just going off duty who insisted that we go together to the local precinct station where there was adequate information. On arrival at the precinct station there followed a long conference to the general effect that Herr A. would be a much better man to do translations than Herr B., whom I had hoped to locate in a certain hard-to-find street.

Identifying the Prospect

In many nations there is a name equivalent to John Smith in frequency of occurrence. The contacting officer's headquarters naturally wants to be certain whether such and such John Smith is the one on whom they already have information, or instead is really a new John Smith about whom they wish to build up a file. The way to avoid this kind of coincidence is to determine dates and places of birth.

In the case of prominent people, this information is usually available in *Who's Who* type almanacs, and the question of identity can easily be disposed of even before an interview is sought. In the case of not-so-prominent people, good luck and/or skill in elicitation is the only answer.

Research in the city hall can reduce the need for elicitation from the prospect. Registry cards in foreign countries often have the date and place of birth on them. When the operative asks for the address of a person, the registry clerk may just hand him the official card for a minute to copy the address. Other identifying data can be remembered

until one is outside and has a chance to write that down also. Sometimes the functionary will not be averse to conversation. On one occasion I asked if the person I was tracing had come to Bad Ems from such and such a place. (The place name had been picked out of thin air.) By sheer good luck the official was only too glad to correct me with a flood of desirable information.

If the interview is under way and the identifying data has yet to be obtained, the contacting officer faces a major challenge. It is easy to induce a person to talk about his work and interests, but he may not wish to disclose his place of origin, because of a local prejudice against outsiders, or fear that the interviewer may have a prejudice against people from his area. Here again, however, the desire to contradict a wrong statement with correct information can often be easily aroused. The interviewer can sometimes do this by saying something like, "You have been quite successful here, I suppose you were born here." Or, if the interviewer speaks the language of the prospect fluently, he can try the accent ploy. "Your accent seems a little different from that of the people I know from around here. Did you grow up here?" If one can get the prospect on the subject of travel and vacations, this birthplace data can often be obtained. If the interviewer suspects his subject is from a certain area it is easy to say he once visited the area, found it charming and then ask if subject has been there. (The interviewer had better be telling the truth about having been there!) The subject of vacation travel can often be used to determine birthplace, sometimes the specific place or at least the general area. People usually like to talk about their vacations and it is natural to ask how they picked the place and whether they came from the area in question originally.

Date of birth is more difficult to obtain. Many people are very clever about concealing this detail even from their intimate friends. Unless one can identify one's self as a representative of the Pension Bureau, the Census Bureau, or some such governmental office which might involve showing credentials, one cannot politely ask a stranger's age, at least in most of Western society. (Greece is perhaps an exception.) This is particularly true if the interview has been sought on the pretext of discussing the man's work on some technical topic, or a long-standing political problem like Franco-German relations. Sometimes events in science or politics can be cited by the interviewer in such a way as to make the subject respond in a helpful manner. The interviewer can say, for instance, if atomic energy is being discussed, something along these lines: "Yes, I was only 24 and just out of college when the Hiroshima bomb was exploded." Hopefully the subject will

volunteer a similar statistic in his life. Other events covering a limited span of time, like the ownership of a crystal radio set or a certain style of clothing, can be used, as well as specific political or other events, such as Lindbergh's flight. Wars or war service can sometimes be used as the basis of a rather challenging assertion that can flatter the prospect's vanity so he or she will boastfully produce information about age. This was successful in producing the age of a not-so-young looking man in Luebeck to whom the writer said: "I suppose you were too young to have been in World War I?" Luckily the answer came back, "I served three years and I am now 72." This, of course, demanded an immediate and automatic response. "You certainly don't look it!" In such cases the target personality may reply, "Yes, I was 72 last August 4th." If not, the interviewer may be able to say something about his father having turned 72 on such and such a date, and hopefully the target will volunteer his birth date.

Keeping the Source on the Desired Topics While Maintaining One's Cover

This can be a vexing problem. Often the meeting has been requested on the pretext of discussing a topic very different from the real one of interest to the contacting officer. In such cases, the elicitor's pay dirt is often to be found in the digressions that take place. Thus, I found it hard to not appear upset when the subject said cheerfully, "Well, Mr. Bull, you did not come here to hear about my travels in Russia and my friends there. Now about the electric motor my institute here in Karlsruhe is developing . . ."

Some authorities hold that elicitation is easier in a group than in a face-to-face interview, but this writer disagrees. In my experience individuals are much more cautious in their statements when in a group than in a face-to-face interview. In a group situation, the potential source often acts as if he feels that he must not spend too much time in dialogue with a particular person lest he be thought rude to the others present.

In certain unplanned situations where the writer's wife was present, it appeared desirable to try to elicit certain possibly useful information. The source would just begin a topic, drop a gem or two, and then turn to the writer's wife saying: "This cannot be very interesting to you. How are you enjoying your stay here in Germany?"

One of the most annoying obstacles to keeping the source talking about the desired subject may be his desire to talk about his contacts in the interviewer's own country. The writer, trying to elicit information about the Soviet Union, found it very difficult to keep a distin-

guished professor of mechanical engineering in Aachen from telling him in great detail about his trips to the United States and the good time he had had at a professional meeting in Philadelphia.

It is obvious that the interviewer in an elicitation situation must always keep in mind the stated purpose of the meeting and not become too intent on getting pay dirt from the digressions. Elicitation targets are often likely to be persons of above average or superior intelligence. Like most people, they are wary in talking to a stranger who has asked to meet them. Too much interest in the digressions can easily make the whole interview go completely sour, resulting in hostility on the part of the source who suspects that he is being used. It was an unhappy moment for the writer, who became too interested in the adventures and information potential of a certain Volga German woman whom he had approached in her new home at Saarbrücken on the subject of doing translations, when she suddenly asked, "Why are you so interested in me as an individual instead of talking about translations?"

The need for precautions to prevent the interview from blowing up in this manner is essential even if the elicitor is working only as a spotter, and protects his cover by turning over subsequent recruitment approaches to a different individual. The spotter will often want to re-interview some subjects. Sometimes more information is desired by the base before a case officer contacts the prospect. For cover purposes, the contacting officer must re-interview some people. He must be careful not to become known as the man who "saw lots of people only once and some of them were approached by an intelligence recruiter."

It is axiomatic that a successful elicitation interview obtains information on which a case officer can open negotiations and take over the contact. It is also desirable that the interviewer stay on a friendly basis with the subject. He can go back to visit him in an atmosphere of developing friendship. Such subsequent visits can obtain useful information even if no recruitment has been carried out, attempted, or even planned.

Far different from the episodes recounted above was a successful elicitation in which the writer built up rapport, obtained useful information, and turned it over to his superiors. Some months later, he was asked to see this distinguished professor of theoretical physics at Hannover again, and obtain certain information about his planned attendance at some meetings where there would be a large Soviet delegation. During a pleasant luncheon in an atmosphere of increased cordiality, the professor asked the writer if he knew a certain person

from the city where the writer was stationed. Recognizing the alias of a colleague, I offered a suitable denial. The professor then lowered his voice and said, "He called on me recently. I don't think I want to have anything to do with him, for I think he is connected with intelligence."

Concerning locusts

INTELLIGENCE IN THE ECOLOGICAL BATTLE

By

Mary Bailey and Gordon Torrey

"—and the Lord brought up an east wind upon the land and all that day, and all that night; and when it was morning the east wind brought the locusts. And the locusts went up over all the land of Egypt, and rested in all the coasts of Egypt—for they covered the face of the whole earth, so that the land was darkened; and they did eat every herb of the land, and all the fruit of the trees which the hail had left; and there remained not any green thing in the trees, or in the herbs of the field, through all the land of Egypt." (*Exodus*, Chapter 10)

The contribution intelligence can make to action in the environment was exemplified in 1968 when CIA fired a shot in the world's ecological battle by calling US officialdom's attention to an age-old natural disaster that was about to overtake the Middle East and Central Africa—a locust plague.

Locusts are a member of the grasshopper family, but unlike the common grasshopper, change both their physical form and their habits depending on whether they live in small communities or in large groups. The locust moves from its relatively harmless solitary phase, during which it resembles a simple grasshopper, to what is termed the "gregarious" phase largely as a result of meteorological factors; wind patterns can bring groups of non-swarming locust together and, at the end of the rainy season, supplies of food begin to decline and the locusts are forced closer and closer together.

The resulting swarms can cover areas up to more than 400 square miles; there can be at least 100 million and sometimes as many as 200 million locusts per square mile. Only a half million locusts eat as much food in one day as 10 elephants, 25 camels, or 250 people. An infestation in Ethiopia in 1958 devoured enough grain to feed 1 million people for a year and, in 1962, a horde demolished almost a million dollars worth of cotton there.

There are several varieties of locusts which can be dangerous to the economies of Africa, the Middle East, South Asia, and large parts of South America. The most wide-ranging and destructive of these is

the Desert Locust (*Schistocerca gregaria*). Swarms of the Desert Locust can invade a total area of 11 million square miles, more than 20 percent of the earth's surface and affecting one-tenth of the world's population. This entire area is not usually menaced at one time, but in peak seasons swarms can range from the West Coast of Africa, extending northward into southern Spain and Portugal, across the Middle East into India and even enter East Pakistan. These insects can, under favorable wind conditions, make flights of up to 1,600 miles without landing.

Control

SCHISTOCERCA GREGARIA

Hail to thee, red locust
Bird thou never wert.
Hopulating, copulating
In the desert dirt.

Fly, you fecund females,
Swarm and breed and lay
Eggs, for on the morrow
Comes the poison spray.

R.F.

Locust control in the key breeding areas of East Africa and the Arabian Peninsula is handled by an off-shoot of the UN's Food and Agriculture Organization (FAO) called the Desert Locust Organization of East Africa (DLOCEA). This group, established in 1962, is made up of members from Ethiopia, Somalia, Kenya, Tanzania, Uganda, French Somaliland, Saudi Arabia, and the Sudan. It works closely with, and is aided by, both the US and the UK. DLOCEA was established both as an early warning and as an eradication organization, but lack of support from member states and squabbling among them, plus limited interest in the outside world have left it with few resources to turn to in an effective effort. In July 1968, for example, when a major plague was threatening, DLOCEA had but four licensed pilots, only three of whom were considered qualified for spraying.* Until early 1968, even the member states were generally apathetic to the problem, and depended in large part on the natural control devices of wind cycles, changes in rainy season, and natural enemies, to keep down the, at that time, low-key problem.

*The insecticides used are: aldrin, dieldrin, and benzene hexachloride. Poison bran is also used.

During the first months of 1968, however, sure signs emerged that a major infestation was in the offing, and DLOCEA, although doing its best, was clearly unprepared to cope with the problem.

The CIA Enters the Picture

On 16 may 1968 the FAO's London-based and sponsored Desert Locust Information Service—which publishes a monthly run-down on the World Desert Locust situation—issued a flash warning which began "Now is almost certainly the last chance of preventing a plague. Even maximum effort may fail to prevent a plague and plans should be made to combat swarm invasions in the months ahead. The most dangerous situation is in central Saudi Arabia where widespread rain in April, and probably also in early May, has produced the conditions for highly successful breeding." This item of overt intelligence was received by a member of the Office of Current Intelligence (OCI), who wrote it up in the Central Intelligence Bulletin on 23 May. A widespread locust plague could have resulted in extensive demands on the US for emergency foodstuffs by countries whose crops had been devastated.

This item aroused more interest throughout the intelligence community than most political articles. Various groups in the community became interested and involved in the problem, and finally the Air Force called for a meeting of the United States Intelligence Board (USIB) Scientific Intelligence Committee to discuss what the US should and could do. The Air Force representatives were obviously concerned over what their assistance might involve from an operational as well as a public relations standpoint; also they were concerned about whether the Soviets would try to get in on the game. Another Committee meeting took place on 15 July at which a locust expert from the Department of Agriculture, who had been in the locust breeding areas, reported that the situation was rapidly worsening. The Air Force at this time said that it was making contingency plans to help out if anybody requested them, but seemed hesitant to become involved unless asked by the locust's host countries. Meanwhile, the Office of Basic and Geographic Intelligence published an intelligence memorandum on "The Desert Locust Threat," a virtual handbook on the subject.

OCI continued to report on the problem. In late October 1968 the OCI Weekly said that widespread plague conditions could continue for several years, and pointed out that Saudi Arabia was the major obstacle to a serious effort to eradicate the threat. Saudi resistance was partly bureaucratic inertia and partly a parochial outlook

on the locust problem. The southern coastal areas of Saudi Arabia were the prime breeding ground for the locusts and, given the variable wind currents operating in the Red Sea area, unless the locusts were wiped out there they could be carried in dangerous numbers both north across the desert and west over the Red Sea to the Horn of Africa, whence they could be carried as far eastward as India and Pakistan. Saudi Arabia, itself, was only minimally threatened.

Cables were flying between Washington and the US Embassies in those countries involved. Political antagonisms between many of the countries required complicated efforts to begin and coordinate the campaign. The Air Force was ready to move in Saudi Arabia, but the Saudis were reluctant to let the planes in to deliver insecticides. The Saudi reaction was that of just wait, and Allah will see that the locusts will all go away. (A small part of this attitude might be attributable to the fact that locusts are considered a delicacy in Saudi Arabia. An observer in Beirut had reported earlier that the insects were being packaged by entrepreneurs in Jordan and sold like Fritos in the local markets.)

Finally, in late February, after much persuading, the Saudis were convinced and gave their permission for the Air Force to move in with insecticides and spraying equipment. Within two months the threat had drastically declined, and, as of over a year later in June 1970, the coast is virtually clear.

Whether or not CIA's announcement to the intelligence community of the threat was the prime mover creating interest in the problem and the successful pressures by the Air Force to do something about it is, of course, impossible to say. The spraying efforts were invaluable and were only accomplished after much diplomacy by the State Department. Members of the OCI who followed and reported on the locust threat, however, take some personal pride in having generated interest in the problem, and feel that they had a share in contributing to the diminishing signs of infestation on the monthly maps coming out of London. Today's maps are almost entirely blank, except for several "dots" in Spanish Sahara.

THE SOVIETS AND REPETITIVE FORMULAE

REFERENCES: *Interpretation of Soviet Press Announcements of "Cosmos" Satellite Launchings.* Edward M. Hinman, Studies in Intelligence, Summer 1969, p. 21.

The SS-8 Controversy. David S. Brandwein, Studies in Intelligence, Summer 1969, p. 27.

The *Postscript* to the Hinman article asks the basis of the Russian's consistent adherence to formulae revealing data regarding their satellite launchings in their press releases. The answer to this problem may also be pertinent to the analysis problem recounted in the Brandwein article.

Persons who insist on performing any act with excessive rigidity of pattern where there would ordinarily be room for arbitrariness or free variation are known as obsessive-compulsives in psychology. However, in the case of the Russians, the exhibition of this trait more readily falls into the field of cultural anthropology; the trait is a deeply ingrained cultural facet of the European Russians and may also apply to Slavs in general. Once they have found a simple, effective method of accomplishing a task it takes the dynamite of extreme necessity to cause them to either case or introduce a chance for improvement's sake. It appears that they work on the basis that "the better is the enemy of the good." In their surge of hothouse development during the last half-century they may have found that they were working with a minimum of skilled workers and a maximum of untutored peasants. After setting the untutored to a task which they could perform satisfactorily as a rote mechanical function it could be considered wasteful to try to revamp the task by introduction of a new method when there were many other new fields to conquer and problems to be solved.

Whether the above is fact or fancy, it is an illustration of how the Russian thought pattern has worked in diverse fields. Their rigid repetition of battlefield tactics cost them dearly against the Germans. The protracted period of development of a Soviet infantry assault weapon, and the 7.62 mm. cartridge, was no doubt a result of parts or tooling-up for production. However, it proved disastrous not to change weaponry until long after the enemy had come up with a more efficient

way to kill! As Hinman illustrates, it is easy for typesetters when satellite launchings are announced in stock phraseology, but it is grim when the opponent figures out the formats. The rigid and dogmatic nature of Marxism-Leninism reinforces the reasoning behind this thought pattern.

There is one other cultural factor (possibly more pertinent to the Brandwein article) which operates complementary to the Russian lack of versatility regarding change or improvement. The Russians are amazingly poor as inventors, but excellent as innovators. For them, new does not mean an original development but rather an innovative development, i.e., a re-constitution of already-known elements. We generalize and impute to the Russians special abilities in mathematics and chess. However, both mathematics and chess are fields wherein infinite variations and developments are possible, but only with a delineated framework—viz., a basic set of ten digits or the prescribed movements of different pieces about a chessboard.

These two concepts, rigid adherence to established procedure and innovative vs. inventive approach to problems, combine to cause the Russians to reveal themselves as described by Hinman. It is predictable that they will continue to do so until they are literally hit over the head with the ramifications of their adherence to the formulae of their press releases. Only then will an order for change of routine begrudgingly filter down through their staid bureaucracy.

It is hoped that the above may be beneficial in reference to the two cited articles or in the resolution of similar situations. Author Hinman is to be commended; he has noted the Russians demonstrating a cultural disability, the full leverage of which can be utilized for our own national interests.

A MODEST SUGGESTION FOR A REVIEW OF THE BIDDING

Although the author is not a technical specialist, and is not assigned to any analytical element of the Agency, he has reflected on the problem of nuclear stockpiling. While he recognizes that the arguments of the intelligence community in favor of gaseous diffusion as the enrichment method used by Soviets and Chinese is strong, he suggests that a re-evaluation of the evidence might be desirable if for no other reason than to avoid the pitfalls of overconfidence.

Postulate: The Soviets are Using the Centrifuge for Mass Production Enrichment

The general consensus in the intelligence community has been for years that the Soviets have been and are using the gaseous diffusion method to obtain weapons grade uranium. No other isotope separation method is used for mass production purposes. Other methods for uranium enrichment are merely in an experimental stage.

It is suggested that the Soviets have been using the centrifuge for some years, not as a topping plant but as a method for large scale production of weapons grade uranium.

Since the Soviets have for some time enjoyed nuclear "sufficiency," it may be argued that it is irrelevant by what method their present nuclear stockpile was achieved. However, if a mistake has been made with respect to Communist China, the consequences would be, to say the least, extraordinary.

Argument for Soviet Centrifuge Mass Production Program

No firm evidence can be given to support this thesis. However, there are sufficient inferential indications to suggest that the old gaseous diffusion doctrine should be critically re-examined. The "evidence," in brief, seems to be as follows:

When the Soviets encounted corrosion problems in their Verkhne-Neyvinsky cascade in October 1948, Max Steenbeck offered to Lavrenti Beriay, the centrifuge as a topping plant.

When the topping plant became unnecessary (the Soviet physicist Voskoboynik having found the cause of the corrosion), Steenbeck offered to design an entire cascade of centrifuges—not just a topping plant. By 1953, the Germans had more or less frozen the design of a suitable short-bowl centrifuge, and three were ordered built, while plans for a battery of 40 more were discussed among the Soviets in OKB-133, Kirov Plant, Leningrad. When separation tests on this bank of centrifuges began, the Germans were withdrawn from the project. Two interpretations are possible. Either the Soviets lost interest, or they had reached a point where they could proceed without German help; indeed, a point had to come when security demanded that the Germans must be withdrawn.

That the centrifuge was a functioning machine, and not merely the exaggerated wish-fulfillment of a protagonist, was demonstrated in 1960–1961. Gernot Zippe, from the "Steenbeck Team" built a centrifuge like the Soviet equipment at the University of Virginia. It was a shoe-string operation, but the machine worked. [Thus, in 1961, the US had what had been given the Soviets 8 years earlier.]

There is a perfectly proper tendency in the Community to discount the tales of Zippe. Since he is the apostle of the centrifuge today in Germany and Western Europe, his views are self-serving. Now however, comes the statement of a totally impartial source—Heinz Barwich. If anything, he should have a bias in favor of gaseous diffusion, with which he was identified as early as 1946, when he first visited Isaak K. Kikoin's institute, N11-5 in Moscow.

After his defection and debriefing, Heinz Barwich testified before the US Senate's Committee on the Judiciary (15 December 1964). The Committee was interested in the internal security of the US; its counsel was no technician. Inevitably, however, the testimony turned to technical matters which the counsel was unable to pursue. Thus, the counsel asked Barwich which nation, the US or the USSR, was technically more advanced. Barwich began a recitation of American technical accomplishments. The counsel was not interested in details, and again asked a general question: "Which nation leads in the nuclear sciences?", but no one was really interested in the professorial reply. A little later, the counsel, being a good lawyer, turned the general question around, and asked in what fields did the Soviets excel? Barwich was barely permitted to get across an answer to the effect that they may be ahead in ceramic fuel elements for first reactors, and "in separation, they use the ultra-centrifuge for uranium on a large or mass production scale." Obviously unable to follow the technical jargon, the counsel's reply to this bombshell was "Do you expect, sir, to continue to engage in scientific research in the United States?" The avenue opened by this statement was not pursued, and thus it came about that the statement of Barwich made in 1964 was lost, and went completely unnoticed in the intelligence community.

It was fortuitous that the statement of Barwich was once more brought to light 3 years after this death. On a visit to the US during December 1969, Zippe reported Barwich's statement, that the Soviets have dropped the gaseous diffusion method in favor of the centrifuge. After Barwich returned to West Germany to write his book, *Der Rote Atom*, he frequently met with Zippe. He told the latter that the Chief Designer of the Kirov Plant in Leningrad (Senov) had told him [probably in the early sixties while Barwich was Deputy Director of the Joint Nuclear Research Institute, in Dubna] that they (the Russians) were no longer working on compressors for gaseous diffusion, but instead were working exclusively on centrifuges.*

*It ought to be possible to verify this account of Zippe from Barwich's wife, Elfriede, now residing in Cologne.

Argument for Chinese Centrifuge Mass Production Program

During October 1964, the Chinese exploded their first nuclear bomb. There was consternation when it turned out to be a uranium bomb, for intelligence projections had held that the Lanchow gaseous diffusion plant was not large enough to supply the required critical mass by that date.

If anything, the argument for a Chinese centrifuge program is based on even less "evidence" than for the Soviet. However, the consequences of such a program—if it exists—are much more far-reaching.

During his visit in the US, Zippe also reported that Max Steenbeck had been approached by the Soviets in 1958/1959 to go to China and help with the centrifuge project.

In mid-1969, there appeared Francis James' article, with photos, about China's underground missile plant and centrifuge installation. The article has been discredited by intelligence analysts, but no one contacted Francis James. No one asked him to produce the originals or negatives of the photos purporting to be missile underground facilities. How simple it could have been to establish the veracity of his account.

But even discounting the self-serving Zippe, and the supposedly pathological liar Francis James, a case can still be made that the Chinese have had a centrifuge plant since 1964 or earlier. This case admittedly is based on conjecture and deductive reasoning. Let us suppose that at the time Khrushchev agreed to provide the Chinese with an independent nuclear capability, the Soviets spoke to the Chinese as follows:

During World War II, fearing that the Germans were ahead in the nuclear race, the Americans opted for the gaseous diffusion method although they realized it was neither technically the most elegant or economically the cheapest solution. It was only the surest solution.

After Hiroshima, we (the Soviets) were in a race to break the US monopoly. The Smyth report and our own calculations convinced us that gaseous diffusion would work. It was a choice of necessity. You, (the Chinese) are more fortunate than either the US or the USSR. Secure under the Soviet nuclear umbrella, you can choose, not the "sure solution," but the optimum solution. The centrifuge method, now perfected by the Soviets, can produce weapons grade uranium at a fraction of the gaseous diffusion cost. You, the Chinese, are indeed fortunate that you can choose between the two. Technically underdeveloped, lacking in electrical power, you would be wise to choose the centrifuge. However, to still any residual doubts you (Chinese)

might have, we Soviets are also willing to provide you with a diffusion cascade.

If this scenario actually was played in this, or similar form, it would explain why the Lanchow plant was sufficient to produce the uranium bomb of October 1964. It would also require a complete revision of the intelligence community's estimates concerning Communist China's nuclear stockpile. Lanchow, the centrifuge plant, can produce vastly more weapons grade material than Lanchow, the diffusion plant. Or, if Lanchow is a pure-diffusion plant then we must look at other sites as possibly housing a centrifuge enrichment plant.

Postscript: Barwich's statement before the Senate Committee may still have other consequences. The US Government is interested in dissuading the Western European nations from pursuing a centrifuge enrichment program (for power reactors). One of the arguments, no doubt, will be that the centrifuge is wrought with difficulties and exhorbitantly costly. Such arguments are likely to be met with ridicule as the Europeans point to Barwich's testimony that this is the method which the Soviets have been, for years, using for uranium enrichment on a mass scale.

INTELLIGENCE IN RECENT PUBLIC LITERATURE

The Debatable Land: A Study of the Motives of Spies in Two Ages. By *Michael Burn*. (London 1970. pp. X, 285)

Professional intelligence officers will find this book fascinating reading. Mr. Burn discusses three intelligence operations in Elizabethan England: the maneuvers by which Scotland was removed from the French sphere of influence; the attempt to diminish Puritan agitation (and especially to suppress the Martin Marprelate tracts); and the effort to discover and arrest Catholic priests infiltrated from overseas. The book ends with a comparison of the motives of spies in the 16th and the 20th centuries, with rather too much attention being given to Philby as a type of the agent who betrays his own country.

By the sixteenth century, European government had worked out most of the basic tricks of the intelligence business. They knew how to plant agents under deep cover, and how to use businessmen and financiers as auxiliaries. They exploited exiles with grievances against their countries. They intercepted communications, broke ciphers, and leaked false information to their opponents. They were quick to take advantage of all human weaknesses, from drunkenness to fear of arrest and torture. They also suffered from some of the common problems of the profession, worst of which was lack of money. They had their troubles with double agents, lazy and incompetent agents, and rival agents. Mr. Burn makes the interesting suggestion that Queen Elizabeth may have had a small intelligence staff of her own to check up on information supplied by her ministers.

On the other hand, while intelligence planning was good, intelligence techniques were primitive. Ciphers could be broken in a matter of hours; little effort was exerted to provide secure communications; agents were recruited largely through casual recommendations by men who knew someone who knew someone. Everyone must have known that letters were regularly intercepted, and yet important secrets were written down and entrusted to incompetent and untested couriers who spent hours drinking in taverns while their bags were rifled. What is really surprising is that some operations nevertheless were successfully concealed, for example, the spiriting of the Earl of Arran (a claimant to the Scottish throne) from France to England.

All in all, this is a collection of good stories. But, as in most such collections, a great deal is left out. As the author knows (and says on occasion), espionage is only a small part of Intelligence. As he might have added, Intelligence is only a small part of the vast store of information required by ministers of state. The "New Monarchies" of the sixteenth century were not new in their basic structure; on the whole the same old departments did the same kind of work they had always done. What was new was a passionate desire for exact and timely information, and the appearance of ministers who knew how to acquire information. Because the Tudor government was so much better informed than its predecessors, it was able to keep control of England without a standing army and without a police force—no small feat if we remember that the English had killed five of the nine kings who ruled between 1307 and 1485. The instructions compiled for the Secretaries of State all emphasize the importance of information—collection of newfangled devices such as maps and atlases, lists of treaties, names of gentlemen who had influence in their home counties, descriptions of foreign countries, values of various coins, export and import commodities. All these things were grist for the Intelligence mill, but only in the broadest sense could they be called Intelligence.

To take the specific cases studied by Mr. Burn, the French lost their hold on Scotland primarily because they could not get a fleet and army to Leith in time to prevent a link-up between a small English army and the Calvinist Scots nobles. It was doubtless a comfort to Elizabeth and to Cecil to learn from intercepted dispatches that the French could not sail soon enough to spoil English plans, but the English were deeply committed to intervening in Scotland before they had this assurance, and the English learned as much about French plans by open observation of French shipping as they did by purloining letters and breaking ciphers.

Bancroft's attacks on the Puritans owed even less to Intelligence. The Puritans made no secret of their convictions; there was no problem in collecting evidence that would justify expelling a Puritan clergyman from his living or even jailing him. The real problem was political; the Puritan minister might have influential friends. The Martin Marprelate tracts were something of an exception in being clandestinely printed and circulated. Hard work and good luck enabled Bancroft to apprehend the printer and distributor, but neither he nor anyone else ever found out who Martin Marprelate was. And this and other partial successes were not decisive; Puritanism had too much appeal to a large part of the English population to be greatly weakened by the acts of spies and informers.

Spying on Jesuits and seminary priests was somewhat more productive, though still not decisive. Some admirable men like Campion, and some less admirable men who were traitors by any definition were caught and hanged. But while there were many English Catholics, most of them were loyal subjects of the Queen who merely wanted to be left alone. Hanging priests increased Elizabeth's security at the price of tarnishing her reputation. She had some reason to fear religious fanatics, yet with the advantage of historical hindsight it is easy to say that she would have lived as long and England would have been as secure if the executions had never taken place.

In short, as Mr. Burn says at one point, at least eighty percent of sixteenth century intelligence came from open sources; policy successes owed more to diligent compilation of information than to espionage. For some countries and some problems the percentage would be about the same today.

One last remark: the final section on the motivation of spies is thoughtful, sensitive, and intelligent. Mr. Burn is especially good in discussing the weaknesses that lead men into spying against their country. He is much less convincing when he tries to explain why people are willing to spy for their country. Partly he thinks that all espionage is a dirty business and the less of it the better; partly he is so concerned with moral issues that he forgets that espionage also poses intellectual problems. Many people like to solve puzzles and feel challenged by the existence of a secret; espionage presents tough puzzles and closely held secrets. Every historian is a spy on the past, and part of the pleasure of being a historian is to uncover the long-hidden secrets of states and potentates. A good spy has a harder job; he must be a historian of the future. But he also has an opportunity for greater intellectual satisfaction; the secrets he uncovers may be buried, but they are still alive.

Joseph R. Strayer

SATURDAY AT M.I.9. By *Airey Neave*. (Hodder and Stoughton Ltd., London, 1969.)

Airey Neave escaped from Colditz castle, a German maximum security prison for escape-minded POW's, during World War II and eventually made his way home to England. He then spent three years in M.I.9, the War Office Branch concerned with Allied POW's, organizing escape operations in France, Belgium, and the Netherlands.

Saturday at M.I.9 is an account of his three years as a London-based escape organizer. It is also a deep, perceptive look at the whole panorama of World War II escape and evasion. Since few people were privileged to see the big picture as Neave saw it from London, his book carries an authority in this field which few works published to date can match.

The episodes described were chosen from a multitude covering the whole war. They illustrate the evolution of thinking about escape and evasion from the spontaneous activities of 1940 to the highly organized escape and rescue operations of 1944-45.

Neave stresses the importance of training military personnel for escape and evasion, but is careful to note that in his operational area very few home runs were genuine "lone" escapes. The great majority were carried out with local help. The stories of some of the helpers are told in detail. Among them is an accurate account of the work of the legendary "Pat O'leary" (now Major-General Albert-Marie Guérisse of the Belgian Army) who coordinated escape activities in southern France until his arrest in March 1943.

The book is well documented and the statistics given on the number of escapes in different categories are probably as accurate as any available. They are also meaningful in the whole-picture context of this exceptional work.

MEN OF INTELLIGENCE. By Major General Sir Kenneth Strong, K.B.E., C.B. (London: Cassell. 1970. 183 pp. 50s.)

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Describing the successes and failures of a selected group of German, French, British and American intelligence chiefs, Sir Kenneth uses *Men of Intelligence* as a vehicle to emphasize his own favorite theses — the need for centralized direction of intelligence and the key importance of close linkage between intelligence chiefs and policy makers. The book is highly readable, interesting review of the role of intelligence in both war and peace.

In many ways, *Men of Intelligence* is a companion vehicle to Sir Kenneth's memoirs, *Intelligence at the Top* (1968), in which he recounted his experiences as chief of intelligence for General Eisenhower's Supreme Allied Command in World War II, and his post-war service

as head of Political Intelligence at the British Foreign Office, the first Director of the Joint Intelligence Bureau and then the first Director-General of Intelligence at the Ministry of Defense.

Much of *Men of Intelligence* is devoted to European officers little known to Americans. Lieutenant Colonel Hentsch, chief intelligence officer on the staff of General von Moltke, Chief of the German General Staff, came almost by accident to be at least partially responsible for the eventual German defeat in World War I. Colonel Walther Nicolai was the World War I Chief of the German Secret Service. General Charteris played "an important, if somewhat disquieting" part in the latter stages of World War I as chief intelligence officer to the British Commander-in-Chief, General Sir Douglas Haig.

Between World War I and II, French attention focused on the resurrection of the German armed forces, and here General Gauché, as head of the French Deuxième Bureau, provided "extraordinarily accurate analyses" while General Didelet, French military attache in Berlin, was responsible for estimates which were "sometimes badly misleading."

On the German side, Colonel Ulrich Liss of the German Army High Command's Foreign Armies West section produced "brilliantly accurate" analyses of French, British and American forces, in rather marked contrast to the estimates of Russia for which General Krut von Tippelskirch, head of Intelligence at Army High Command, was responsible. Passing reference also is made to Admiral Canaris, head of the Secret Service of the German Supreme Command and to General Gehlen, who became chief of the West German intelligence organization after World War II.

To represent Britain, Sir Kenneth selected "Bill" Cavendish-Bentinck, who from 1939 to 1945 served as Chairman of the Joint Intelligence Committee, with responsibility for coordinating British Intelligence efforts and producing Joint Intelligence estimates.

From what he describes as "an embarrassment of American choice" Sir Kenneth selected two DCI's—Allen Dulles and John McCone.

For those who consider that Major General William J. Donovan, who organized and developed the wartime Office of Strategic Services, also deserves attention, it might be noted he is mentioned only when Sir Kenneth comments on the problems he had in achieving some control over the information OSS fed to American staffs under General Eisenhower's command.

Sir Kenneth confesses that in some ways Allen Dulles always remained an enigma to him and he considers that Dulles "might without

disrespect be described as the last great Romantic of Intelligence," whose "stock-in-trade consisted of secrets and mysteries."

He describes Mr. Dulles as "undoubtedly the greatest United States professional intelligence officer of his time, although he was perhaps stronger and more interested in matters concerned with collection and short term evaluation than the business of long-range estimating." Sir Kenneth sees Mr. Dulles views on Intelligence as fundamentally "simple." He gave great emphasis to the warning function of the intelligence machine. He was convinced that the collection, collation and analysis of information should be conducted by a central agency of government with no responsibility for policy making or such practical matters as choosing weapons systems for the armed forces. He appeared to have no qualms about development "of the more devious methods of collection." He constantly appreciated that "customers" for intelligence were made by men so there must be "a constant search for markets." He also held strong views on the capabilities of Soviet Intelligence, thinking that a ruthless structure of such magnitude could hardly fail to achieve a broad measure of success. (With this latter position, Sir Kenneth differs considerably.)

Mr. Dulles, in Sir Kenneth's view, "can be seen mainly in the terms of the great intelligence espionage 'coup'," while Mr. McCone "was wedded to that part of the intelligence process concerned with evaluation—the forming of judgments on the basis of an insight that comprehends technical and scientific as well as political, strategic and military factors." Sir Kenneth considered Mr. McCone had a particular attribute vital to any intelligence officer in a senior position—a desire "preferably fanatical" to ensure that decisions are based on such intelligence as is available. Mr. McCone "regarded it as his personal responsibility to see that the quintessential end-product of the huge United States Intelligence apparatus was effectively registered at the top," but the author recognized that Mr. McCone was not always successful in his endeavor:

> "And if President Kennedy and his successor had listened to McCone more carefully and given greater weight to his estimates, the United States might not have become involved in its fruitless dilemma in Vietnam."

Throughout the book, Sir Kenneth makes his own position clear. "Intelligence," he writes, is not primarily a matter of secret operations and secret sources; it is instead a matter of judgment and evaluation, and it is in this field of evaluation and so-called 'estimating' that men of intelligence have played their most decisive roles."

At numerous places in the book, including a separate chapter on "Spies," he stresses his doubts as to the usefulness of secret services and secret agents, especially in the military field.

From his examination of the actions and reactions, successes and failures of men of intelligence from Lieutenant Colonel Hentsch in 1914 to Mr. McCone in 1965, Sir Kenneth sees a number of important lessons. He insists that intelligence officers must be prepared to fight to gain acceptance for their ideas, even though none of them to date has managed to achieve a completely ideal relationship with his policy-makers. He considers that intelligence is indivisible and that no area of activity—politics, economics, military affairs, science and technology—can be regarded as a subject apart and treated in isolation; for this reason there must be central control and direction of all intelligence activities by a chief who should have personal access to the top policy makers and decision makers of his government. There are other "lessons"—intelligence must not strive for perfection at the expense of timeliness, and secrecy must not be overemphasized—but the main thrust of the book is clear—in war and peace men of intelligence have succeeded primarily when they were part of a centralized organization and when they fought hard to insure their estimates were fully considered in the reaching of important decisions.

Jack E. Thomas

THE SPRINGING OF GEORGE BLAKE. By *Sean Bourke.*

(New York: Viking Press, 1970. 364 pp. $7.95.)

In the spring of 1961, George Blake, a member of British Intelligence, was charged with violations of the Official Secrets Act. The charges covered the years, commencing in 1951, during which he was accused of communicating information which might have been "directly or indirectly useful to an enemy" and for a "purpose prejudicial to the safety or interests" of his country. In simpler words, George Blake had served as a Soviet agent while in the British Service. A review of *The Springing of George Blake*—an important and fascinating book—is not the vehicle to study the early and professional background of George Blake and his acts of treachery.* Suffice it to say that Blake pleaded guilty to all charges and, on the 3rd of May 1961, the Lord Chief Justice sentenced him to a total of 42 years' imprisonment for his "treacherous conduct" extending over nine and a half years. This was the longest sentence meted out by a British court in this century for a person under indictment. Were he to serve the full sentence, the 38 year old Blake would have been released in the year 2003 at the age of 80. The earliest release for good conduct would have set him free at the age of 66 in 1989. The doors of Wormwood Scrubs prison closed behind him. Shortly thereafter, his conviction was affirmed on appeal.

The British press reported that Blake was under day and night surveillance in prison to prevent any escape; that there were periodic searches of his cell; that his mail was under special scrutiny; that he was allowed to move in prison only under escort. Nevertheless, on 22 October 1966, not quite five and a half years after his sentencing, George Blake escaped from Wormwood Scrubs, and the manhunt was on. The press speculated that the escape was organized by a Russian "spy master." Others guessed that the escape might have been engineered by fellow prisoners for humanitarian reasons because of the length of the sentence. Watches were put on all ports and airfields. A special inquiry into prison escapes and security, headed by no less a public figure than Admiral Mountbatten, was hastily initiated. Meanwhile, while all the furor of the search was on and various clues were being followed, George Blake was ensconsed, unrecognized, in various flats in London. It was not until 17 December 1966 that he departed London, hidden in a Dormobile in which he was taken to the Continent via the Dover-Ostend ferry. From there he was driven into

East Germany where he made the necessary contacts that took him to Moscow.

Earl Mountbatten's report* pointed out the serious security defects at Wormwood Scrubs from which five persons had escaped only four months before Blake did. It was a prison largely for first offenders. The report makes clear that, on at least four occasions, Blake should have been transferred to a more secure installation, or at least to one not in the center of London where a quick getaway was possible once the wall had been scaled. In fact, the Governor of the prison had urged Blake's transfer on one or more occasions. A certain euphoria seems to have descended on the prison officials who felt that Blake was settling down to prison life and showed no intention of escaping. Actually, Blake's name was included on the prison's potential escapers list until 3 October 1966, when his name was removed from the roster! This was three weeks prior to his actual escape. We must now consider Sean Bourke, the author of the book under review.

Sean Bourke was born in Ireland, raised in Limerick, and of his first 32 years he served nine in penal institutions. At the age of 10, in 1943, he had run away from school and began stealing loaves of bread to assuage his hunger. For this he was sent to an Irish reform school where beatings were more the rule than the exception. A while after his release, Bourke left for England but was soon charged with receiving a radio and sent to Borstal for 15 months. After that, there were several years in which he worked hard and went straight. Then the local police caught on to the fact that he had been a Borstal boy and began asking questions about him. As a result of one such incident, Bourke issued a writ against a policeman which was placed on the court calendar for hearing. Shortly thereafter, the policeman received a homemade bomb through the mail, and Bourke was accused of the deed. Although Bourke pleaded not guilty at this trial (throughout the book he rather fudges on the question of his guilt), the jury disagreed with him, and this brought Bourke a seven-year sentence and to Wormwood Scrubs. Bourke's conduct in prison became so exemplary that he was designated a Leader and had many privileges.

For four overlapping years in Wormwood Scrubs, Bourke was on friendly terms with George Blake whom he met at a prison course in English Literature. (Blake was also studying Arabic, a continuation

*One reference to such matters in the text is Blake's boast to Bourke that he had informed the KGB about the "Berlin Tunnel" operation "before the first spadeful of earth was dug out of the ground." When asked by Bourke if all the phone messages which had passed over those lines had been "specially laid on," Blake replied, "Naturally."

of the studies in which he was engaged in Lebanon prior to his recall to England for his arrest.) In an Author's Note at the end of the British edition of this book [not included in the American edition], Bourke says that "Like everyone else at the prison, both inmates and authorities, I was deeply impressed by Blake's charm and good manners and by his humanitarian concern for the well-being of his fellow men." They shared a daily stroll in the prison together for several months. It was in September 1965, a month before Bourke was to appear before the board which would grant him the pre-release privilege of living in the prison hostel and working in the outside world during the day, that Blake approached Bourke and asked him to help him escape. Blake told Bourke that, while he possessed no capital, he represented in his person a fairly substantial sum of money. Blake said that his prison sentence had seemed unreal to him, and that he had hoped that there would be an exchange of prisoners with the Russians, a hope which he said he had good reason to believe would not come to pass. Bourke accepted on the condition that Blake would make no further mention of money. Bourke writes that his reasons for undertaking the springing of Blake included his liking for the man, and the length of Blake's sentence was also a factor in his decision. But, above all, Bourke saw this as an opportunity to strike a blow against authority.

The reasons that Bourke gives for his act are possibly true; maybe even probably so. The truth or falsity of these reasons, however, raises one of the several unanswered questions in this book: namely, are these the real reasons why Bourke sprung George Blake, or was there some mastermind or hand behind the plot? When Bourke writes of his opportunity to strike a blow against authority, he was perhaps thinking of the possible injustice of his own conviction; there is no evidence that he was ever a Communist or anything near it.

There is no need in this review to detail the year of planning that went into the Blake escape and subsequent evasion. Bourke performed this task with a meticulous attention to detail which should win him the admiration of any case officer. He relates the whole matter in this book step by step, and no reviewer should spoil his story in advance, even though we know the outcome. It is written with all the verve and skill of a real dime novel thriller-diller. Only two points might well be raised here. The first involves the smuggling in to Blake, through an intermediary, of a two-way walkie-talkie set for communication with Bourke on the outside. In his report (cited above), Earl Mountbatten concludes that it was unlikely that Blake would use this method of communication. Nevertheless, the fact remains that Blake was able to secrete a walkie-talkie somewhere in the prison,

and, on almost a weekly prearranged schedule, he and Bourke communicated by this means after the latter had been released.

The second point to note is that Bourke had to use the services of acquaintances in London to raise the almost £700 which were required to finance the getaway car, escape clothes, food and apartment rent. Who these persons really were, one does not know. They were aware of the purposes to which the money was to be put, and they raised a good part of it. They assisted, after the escape, in moving Blake from place to place; two of them ultimately drove him from London to East Germany. A doctor had to be called in to fix the wrist which Blake had broken when he jumped off the prison wall. A false passport needed to be secured. Only one couple was so nervous at housing Blake that they insisted on his immediate removal. During all this period, no one talked, no one went to the police, no one exposed them. Why? That again is one of the unanswered questions in this book. There is every reason to believe that the details of Blake's escape, as related by Sean Bourke, are substantially true. Only the names of the people involved, including one or two in the prison itself, and perhaps their true motives, remain undisclosed.

Blake left England in mid-December 1966 and arrived in Moscow a few days later. It had been agreed between them that Bourke would follow him two weeks later. British investigating authorities had already placed Sean Bourke on the list of possible accomplices, and, a week after the escape itself, they had interrogated Bourke's mother in Limerick. There were press reports that Blake himself was hiding in Ireland. Above all, both Blake and Bourke felt it was paramount to protect the identities of those who had aided them, and that this could best be assured were Bourke to sojourn for a short time in the Soviet Union. On New Year's Eve, 1966, Bourke took a night train to Paris and an Air France flight to West Berlin. Looking at Checkpoint Charlie, certain thoughts flashed through Bourke's mind. There was no information as to Blake's fate. He might have been liquidated immediately by the KGB. Bourke himself wondered whether another term in a British prison might not be preferable to his own possible liquidation at the hands of the KGB. But, he writes, "That frontier held a strange, compelling fascination for me." At the agreed hour of 10 a.m., on 2 January 1967, Bourke passed through Checkpoint Charlie into East Germany. As he walked away from the sentry boxes, a car picked him up and he was in the hands of the KGB. A few days later, he rejoined Blake in Moscow. He made it very clear to his hosts from the start that he was hoping to receive their hospitality only for a few months to give his friends in London time to cover their tracks. It was never his intention to remain in Russia.

It is not the purpose of this review to describe Bourke's stay in the Soviet Union, but a few points should be made to highlight other important unanswered questions in this book. Bourke was treated by the KGB with the greatest consideration and care as an honored guest. They appeared to be genuinely impressed by the risks which he had taken and the meticulous professional job he had done in springing George Blake. The latter once told Bourke that the KGB considered the latter to be a very brave man and, whenever, in KGB circles, it was appropriate to mention Bourke's feats, they were always received with the greatest professional respect. He was housed in most comfortable quarters, and, while he and Blake shared an apartment, there were servants at hand. Wine and women were his in plentiful abundance. When Bourke protested against a KGB suggestion (which Blake supported), that the former should remain in Russia for five years, the two were given virtually a VIP tour of Russia for several weeks. He received a generous weekly allowance.

Bourke caused the KGB several problems. They had taken great pains that neither Blake nor Bourke should be seen by any foreigners who might report their presence in Moscow, as this might embarrass the Foreign Ministry. Yet when Bourke felt that the Soviets planned to detain him in Russia longer than he was willing to stay, he slipped into the British Embassy in Moscow, declared his identity, told them he was sharing an apartment with Blake, and requested that they contact the Irish Foreign Office (Ireland having no embassy in Moscow) to obtain for him an Irish passport so that he could return to Dublin. The KGB was pained by this but took no real action against him.

In the summer of 1968, Bourke telephoned his brother in Scotland for a chat. Again the KGB was pained but permitted him to correspond with his brother, and the latter was allowed to come for a visit in Moscow that summer. At that time, Bourke turned over to his brother the manuscript of the book he had been working on detailing the escape of George Blake and also of their life in Moscow. The text was very derogatory of Blake, and the continuing friction between the latter and his savior was also something of a KGB problem. Bourke felt that the manuscript was safe with his brother, because he would be escorted out through customs by Sean and KGB officers and therefore would not be subject to search. However, the KGB, obviously knowing of the manuscript, contrived to keep Sean and the escort

Report of the Inquiry into Prison Escapes and Security (London: HMSO, 1966).
**London: Cassell, 1970.

from the airport, and his brother went through alone, being relieved of the manuscript in the process.

Bourke made no attempt to conceal from Blake, who reported back everything he said, his dislike of living in Russia, of the Communist system with its lack of freedom, and of his desire to be rid of it.

These facts raise interesting questions: Why did the KGB treat Bourke with the care that they did; why did they not send him off to a labor camp or, as Blake himself suggested, simply bump him off? Why, in the end, did they allow Bourke to return to Ireland when they knew he was going to write a book? And why, in the end, did they return his manuscript to him?

Finally, and perhaps most important, what of George Blake? One recalls Bourke's statement quoted earlier in this review of the respect and friendship he held for Blake in Wormwood Scrubs. To quote his "Author's Note" again:

> "But when we eventually arrived in Moscow Blake very quickly began to show himself for what he really was; a ruthless traitor. I risked my liberty to save him from lifelong imprisonment and he repaid me with treachery. The George Blake that we had all known at Wormwood Scrubs had never really existed. It had been an elaborate and calculated pose with a long-term objective. In Moscow, with no more reason for posing, George Blake reverted to type."

When Bourke moved into Blake's flat in Moscow, he found himself with almost a complete stranger, "sullen, intolerant, arrogant, and pompous." Bourke considered Blake to be the vainest man he ever met, "a complete narcissist, unashamedly in love with his own image" and with great delusions of grandeur. He felt that, as a man, Blake was "quite inadequate." It was Bourke's opinion that Blake believed in the Stalinist reign of terror, that he longed for the days of Beria, and Blake admitted as much, adding that "The end justifies the means." In noting the insatiable thirst for power, Bourke came to the conclusion that, if Blake had originally been a member of the Soviet service, he would have betrayed them to the British in the same way he betrayed the British to the Russians. Bourke himself was to be the final sacrifice on the altar of Blake's vanity, but, in the end, the KGB turned Blake down and let Bourke go free.

Bourke's graphic descriptions of Blake's character and actions make an important contribution to the studies of defectors and former agents in place, both for the professional intelligence officer and for psychiatrists studying intelligence problems. Here was a narcissist overcompensating for his underlying doubts. Blake's was almost a Messiah complex with self absorption characteristic of a man who saw himself as a power "above it all."

On 22 October 1968, the second anniversary to the day of Blake's escape, Sean Bourke landed in Dublin, having been escorted to the Moscow airport under the friendliest terms by his KGB case officers. A few days later, he was arrested on a British request for his extradition, and the lower court ordered him delivered into British hands, a decision which was stayed pending appeal. On 3 February 1969, the Irish appellate High Court reversed this decision on the basis that helping Blake to escape was "an offence connected with a political offence" and therefore not extraditable. This decision was confirmed by the Irish Supreme Court, and Sean Bourke was free again.

After he returned to Ireland, Bourke wrote several letters to his KGB case officer in Moscow asking that his manuscript, which had been seized from his brother, be returned to him. He received no reply to his letters. Then, unexpectedly in the spring of 1969, a package was delivered to his solicitor in Dublin. It contained the original manuscript minus the entire final section dealing with his experiences in Moscow and his assessment of Blake. The rest of the manuscript had been heavily censored in a hand which Bourke feels was that of Blake himself. Bourke reconstructed the text, which resulted in the book under review here. It will make a first class movie, and the shooting of the film is just about to begin. (It has already brought a protest from the British Prison Officers Association on the grounds that such a movie will continue the trend of building up the image of criminals into public heroes.) The question arises whether someone with the limited education and background of Sean Bourke could produce such a well-written book. The original manuscript is apparently in his own handwriting and some of the handwritten pages are reproduced in the text. How much has been edited for the purpose of good writing, this reviewer does not know. One can only repeat what one said in the beginning, that this is an important book in intelligence literature.

One final footnote. When this reviewer was in Dublin last fall, he picked up a newspaper which contained an unhappy item: Sean Bourke had been arrested for shoplifting.

Walter Pforzheimer

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